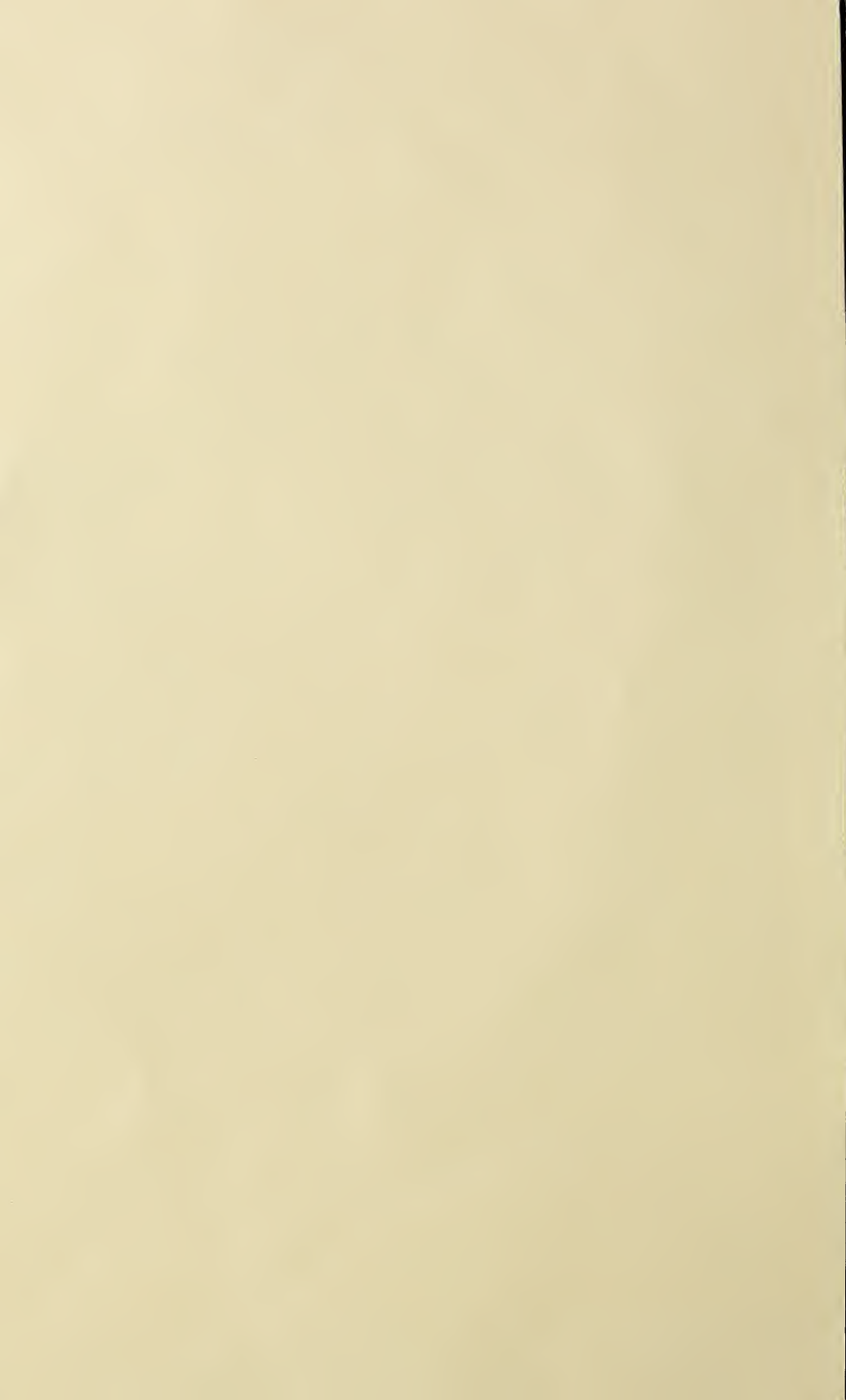
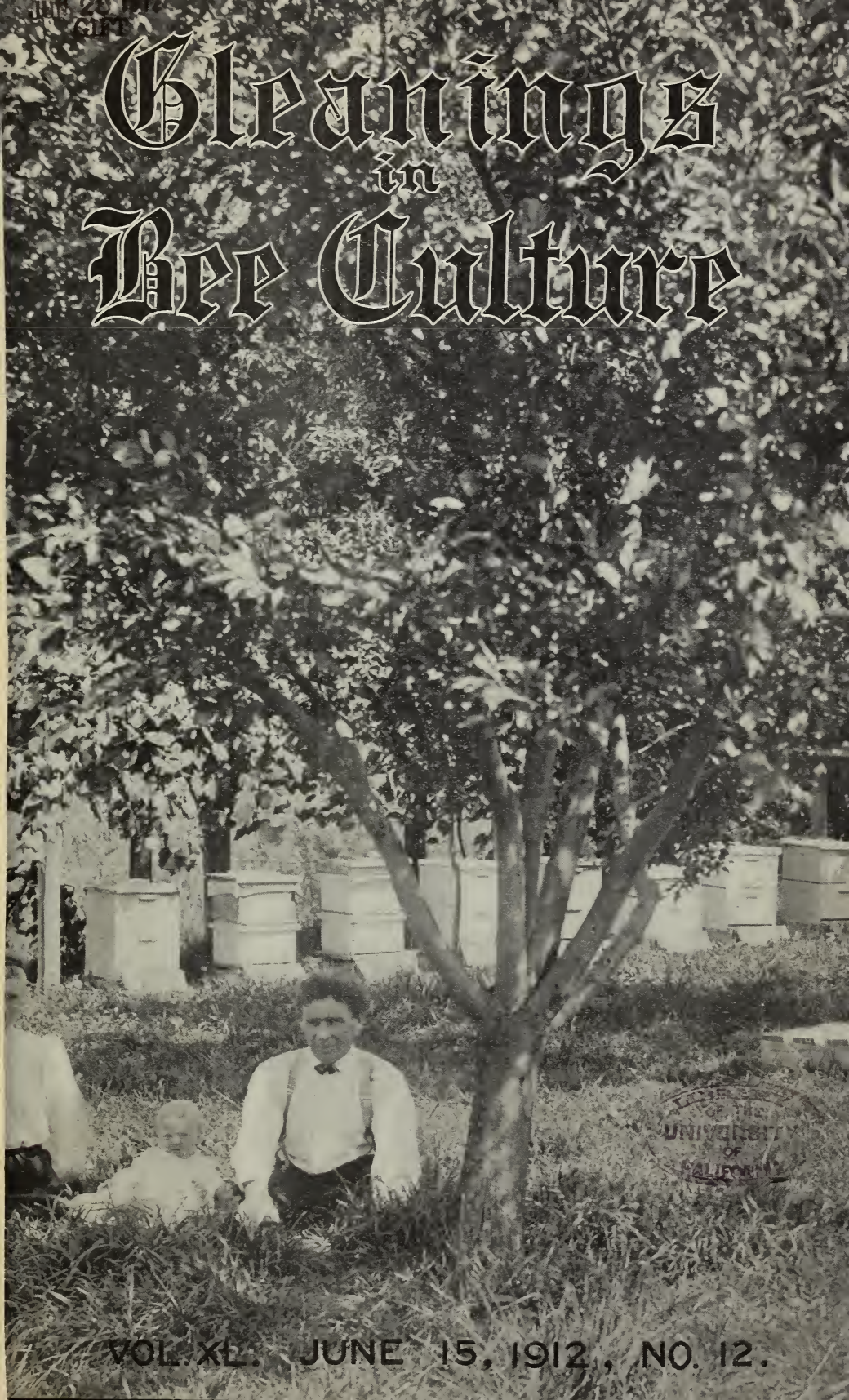


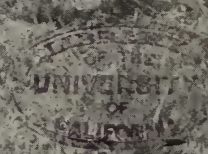
Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.



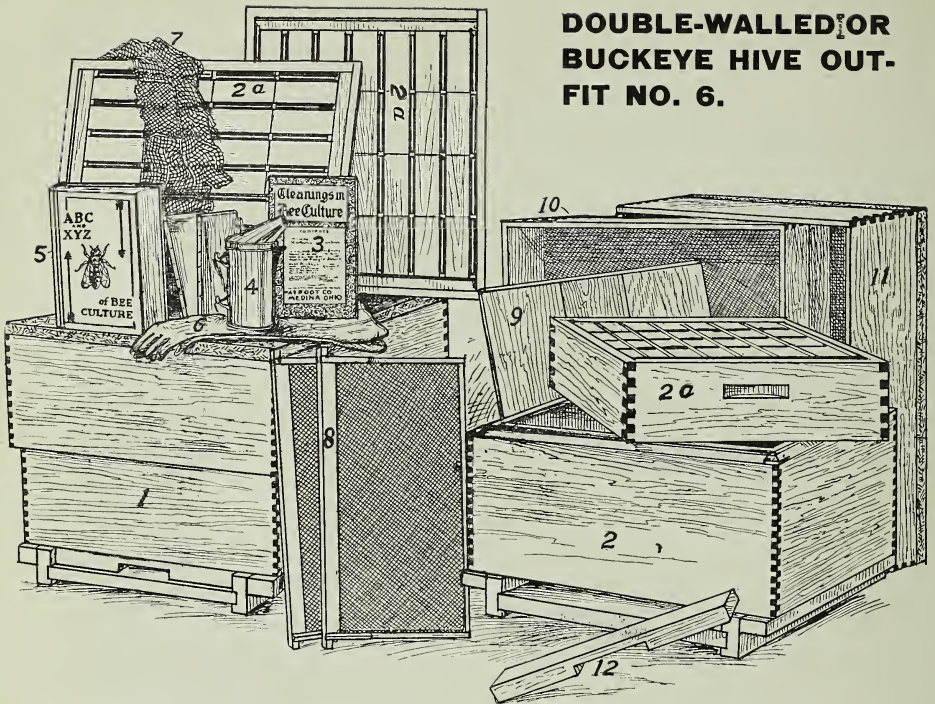


Gleanings in Bee Culture



VOL. XL. JUNE 15, 1912., NO. 12.

DOUBLE-WALLED OR BUCKEYE HIVE OUT- FIT NO. 6.



The double-walled hives suggested in this outfit are adapted for outdoor wintering, relieving the bee-keeper of the work of preparing the hives for winter; and for those who want to keep bees for pleasure as well as profit, we recommend this outfit most highly.

Following is a list of articles included in the above outfit, numbered to correspond:

No. 1—Full Colony of Bees in Ten-frame double-walled Buckeye Hive, Complete with 28 Sections	14.50
1 Tested Italian Queen for Above	3.00
No. 2—Empty Hive Complete for Hiving New Swarm	5.95
No. 2A—Two Extra Comb-honey Supers	2.10
No. 3—One Year's Subscription to Gleanings in Bee Culture (large semi-monthly, illus.)	1.00
No. 4—Standard Root Smoker	.85
No. 5—A B C of Bee Culture	\$1.50
No. 6—Pair of Bee-gloves	.50
No. 7—No. 2 Bee-veil	.60

No. 8—Shows two brood-frames with full sheets of foundation, from which the bees build honey-comb. There are ten of such frames in each of the hives. No 9 is a super-cover. No. 10 is a tray which is filled with chaff or other packing material to afford protection in winter. No. 11 is the hive-cover or roof which telescopes the hive-body as shown in No. 1.

SPECIAL OFFER { Delivered at any express office in U. S. east of Mississippi River and north of Ohio River. (Bees can not be safely shipped till after May 1st.) **\$30.00**

For delivery to points outside of above free limit, we will make terms on application.

The investment here is a little more than for some of the other outfits we furnish; but if you expect to keep a few bees only, just for recreation or to make enough honey for your own table, you will not need to make any further purchases for some time, except a few extra sections the second season.

The A. I. Root Company, Medina, Ohio

Enclosed find draft for \$30.00, for which please send me Outfit No. 6, as listed above. I understand that you guarantee safe arrival and prepay all charges, if north of Ohio River and east of Mississippi River.

Name

Town

County.....State.....

Gleanings in Bee Culture

Published by The A. I. Root Co., Medina, O.

H. H. ROOT, Assistant Editor.

E. R. ROOT, Editor.

A. L. BOYDEN, Advertising Manager.

A. I. ROOT, Editor Home Department.

J. T. CALVERT, Business Manager.

Entered at the Postoffice, Medina, O., as Second-class matter.

VOL. XL

JUNE 15, 1912

NO. 12

Editorial

DEATH OF DR. JOHN S. HOWKINS.

DR. JOHN S. HOWKINS, one of the prominent beekeepers of Savannah, Georgia, and for a number of years connected with the beekeepers' supply business under the firm name of Howkins & Rush, at Savannah, died recently. Mr. Howkins was a man who stood high in his profession, was a man of personal magnetism, and had hundreds of friends in Savannah who loved him for his warm, true-hearted nature.

THE BULLETIN ON SWEET CLOVER.

WE are informed that Bulletin 98, Bureau of Entomology, entitled Historical Notes on the Causes of Bee Diseases, and Bulletin 485, from the Department of Agriculture, on the subject of sweet clover, are not for free distribution. Five cents is the price of the former, and ten for the latter. But they are well worth the price—especially the bulletin on sweet clover, which every beekeeper should secure before the supply is exhausted.

100 LBS. OF SECTION HONEY BEFORE MAY 28.

THE following letter received from one of our subscribers will explain:

On May 2, 1912, I had two swarms that clustered together. On May 28 this colony gave me 100 lbs. of fancy section honey. Is that not a good yield for Virginia?

Petersburg, Va.

W. E. FERRELL.

While this, perhaps, is not "breaking the record" by any means, it goes to show that the conditions are going to be right for a honey-flow this year. Reports are looking good for a good old-fashioned flow, where there are bees to gather it.

GLEANINGS UP TO DATE.

PERHAPS our discriminating readers will observe that this issue is printed on a new face of type. More exactly, every issue of this journal from now on will be printed on an entirely new face. Our new \$4000 linotype, which we purchased last December, has been kept busy at work on various pub-

lications sent out by the GLEANINGS publishing house; and it was not until this issue that we were able to catch up enough so that our journal could be set on the machine. Machine composition will, therefore, be used hereafter in our printing rooms. One person is now able to do practically as much work as four or five compositors.

GLEANINGS is being set up and printed on the most up-to-date machinery that it is possible to produce. We are using the most modern appliances for making our photos and engravings, including the very latest new patented "overlay" by which the half-tone cuts come out brilliant and clear.

IS THE SPRAYING OF FRUIT TREES WHILE IN BLOOM NECESSARILY INJURIOUS TO EITHER BEES OR BROOD?

SOME question has been raised in this country whether the spraying of fruit-trees while they are in bloom is damaging to the beekeeper, as has been commonly believed. We have always supposed (basing our opinions on reports from all over the country) that such spraying was injurious, particularly because thousands of dead bees have been reported at the entrances of hives in localities at just the time the trees are sprayed when in bloom, and because brood is found dead at about this time. But there are some authorities, however, who believe that the dead brood in most if not all of these cases is due to foul brood rather than to poison. But foul brood does not account for *dead bees* in front of the entrances; and particularly does it not account for a rapid decimation of the strength of the colony while the trees are in bloom.

We are always willing, however, to give the other side of any question; and from the *Agricultural Gazette*, of New South Wales, for April 2, we learn that Messrs. E. E. Prescott, Principal of the Horticultural School at Burnley, and F. R. Beuhne, a

beekeeper well known to our readers, conducted some experiments to ascertain whether the spraying of fruit trees with poisonous mixtures while in bloom had any effect on either the bees or the brood. The result of their experiments is summarized as follows:

At the Burnley apiary, the beehives are right under the fruit-trees, and at the time of spraying with Bordeaux mixture the ground had not yet been plowed, so that the spray fell not only on any fruit blossoms that were open, but also on the Cape weed then abundantly in bloom.

Neither the spraying with Bordeaux mixture nor the subsequent one with arsenate of lead had any effect whatever upon the bees, the colonies developing normally, and without any checks. There was not at any time dead brood in the hives. There is no doubt that under the atmospheric conditions prevailing at the time the spraying of the trees proved quite harmless to the bees. Observations will, however, be continued in future, to demonstrate whether spraying is injurious to bees at all; or if so, under what conditions.

ROBBER CAGES.

ON page 383 of our Heads of Grain department in this issue is an illustration of a portable robber cage mounted on wheels to set over a hive. Practically the same thing without the wheels, and much smaller, or just large enough to set over an ordinary hive, we find a very serviceable thing to have in the apiary. The advantage of the smaller size is less weight with corresponding greater portability. In the cage shown on p. 383 the operator can be caged with the hive of bees.

We use also a robber cage (large enough for operator and hive) that is very light. It has a cross rail or handles on each side, and a convenient screen door. One can step inside, lift the cage up by its cross-rails, walk over to the hive that needs attention, and set it down.

In our judgment, wheels only add to the weight and to the inconvenience of getting such a cage from one part of the apiary to the other. Our large cages for setting over the hives are made of strips of bass-wood $\frac{7}{8}$ inch square, and do not weigh over 5 lbs.

WILL IT BE AN OLD-FASHIONED HONEY YEAR?

INDICATIONS in our locality (and we hope it is a fair criterion of what it will be in other clover districts of the North) point to an old-fashioned honey year. While there is, perhaps, not as much white clover out as we have some years, yet what we do have seems to be yielding nectar. Both red and alsike clover are very abundant in our locality, and the growth is luxuriant. Apparently the severe winter did not hurt either very much if at all; and that reminds us that years ago, when we used to have a yield of clover honey every year, we had cold winters. Is it possible that a cold

snappy winter like we have just had causes nectar to be secreted more readily the following summer? In the language of Dr. Miller, we don't know.

Another thing that is encouraging is that basswoods look more promising than they have before in a decade. While the indications are for a good honey-flow, we fear that not every one else will be as well favored with bees as ourselves.

In the mean time there are some reports from California that look rather encouraging. How reliable our information may be we do not know; but several clippings have been sent us that would indicate that there will be 500 carloads of honey in California. We do know this — that many carloads of bees are being sent from the bordering States into California to catch the flow, after which they will be sent back to their respective States.

Our representative in Texas wrote us a short time ago, saying that he thought the crop in his State was going to be light. While the early indications were good, the flow did not materialize. We hope it will not turn out this way in our northern States.

THE CAUSE OF EUROPEAN FOUL BROOD.

It will be remembered that Dr. G. F. White, of the Bureau of Entomology, Expert in Bacteriology, and working under the direction of Dr. E. F. Phillips, Apicultural Expert, has been investigating the causes of bee diseases for several years back. After devoting something like a year or more to the special study of American foul brood he definitely located the bacillus responsible for that disease; namely, *Bacillus larvae*. He proved beyond any question that *Bacillus alvei*, supposed to be the cause in former days, had nothing to do with it. But he did find *Bacillus alvei* in samples of European foul brood. It seems that he has been working upon this type of the disease for the last two years; and while he will not as yet make any positive statement it would seem to us that he has come pretty near locating it. He finds among other microbes in the dead brood from the European foul brood, *Bacillus alvei* and *Streptococcus apis*. He also found the old *Bacillus Y*, which he discovered some time ago, and which he at the time suspected might be the cause of European foul brood; but before he could get more evidence he came to no conclusion.

Circular No. 157, by Dr. White, just out, gives some interesting information. Among other bacilli he finds *Bacillus Y*, or *Bacillus pluton*, as he now designates it, and under

conditions that would seem to show to the average layman at least that this bacillus is responsible for the real European foul brood. He has proved beyond any question that the other bacilli mentioned, when fed from pure cultures to healthy brood, do not cause any disease, although they may or may not be present. The *Bacillus plulton*, however, is discovered at the very beginning or the first symptoms of the disease, and continues clear on through. Later on, as the disease develops, *Bacillus alvei* and *Streptococcus apis* develop. Whether they have a tendency to modify the form of the disease is not quite clear; but from all the evidence presented it would look as if Dr. White had found the real cause of European foul brood, although he does not definitely claim it even yet. It has taken a long time to do it; but it has been worth while.

Copies of this bulletin can be obtained by applying to the Superintendent of Documents, Government Printing Office, Washington, D. C., enclosing five cents. Stamps will not be accepted.

THE CHEMICAL ANALYSIS AND COMPOSITION OF IMPORTED HONEY FROM CUBA, MEXICO, AND HAITI.

THE foregoing is the title of Bulletin 154, from the Bureau of Chemistry, by A. Hugh Bryan, Chief of the Sugar Laboratory. It is well known that honeys vary slightly, owing to different climatic conditions in localities from which they are gathered. As various honeys are being imported into the United States, it is important to know their exact chemical composition, for comparison with certain other honeys that might be imported, or which are alleged to be imported, but really are an adulterated honey pretending to be what it is not. The results of the examination of honeys from Cuba, Mexico, and Haiti show a "slightly greater moisture content and a somewhat lower percentage of sucrose." Otherwise there is no pronounced difference.

Further particulars can be secured by applying for a copy of this bulletin to the Superintendent of Documents, Washington. It is not stated whether there is any charge for this, but probably it is about five cents. Do not send stamps, as the governmental departments can not use them.

THAT SECOND CARLOAD OF BEES FROM FLORIDA.

THE second car arrived at Medina, with our man in charge, June 1, in record-breaking time, being only five days from the time

of starting from Patrick's Landing, Florida, till it reached Medina, covering a distance of 100 miles by water and 1000 by rail. As in the former case, Mr. Marchant stayed with the bees in a cattle-car night and day, for the bees required almost constant attention. It was necessary to give them water, and keep them sheltered from the direct rays of the sun when at stops. The previous shipment of bees took eight days: this one just in, five days. This difference is due, first, to a shorter route; and, second, to a better knowledge of how to handle railroad men.

The second lot of bees did not come to us in quite as good order as the first, however. The first carload was made up of 500 three-frame nuclei. The second car contained 248 ten-frame colonies, screened top and bottom. In some cases there was a quart or more of dead bees on the bottom of the screens, but in most cases practically none.

Both shipments proved beyond a question the importance of having a man along with the bees, and not only in the same train but in the same car. When weather conditions are fair, a man can travel with a fair degree of comfort. The first carload of bees started when the weather was extremely hot, and landed here in a snowstorm with a temperature nearly down to freezing. The second shipment had extremely hot weather all the way; and this, we think, accounts in part for the larger loss of bees; for on the previous shipment there were almost no dead bees.

Another lesson we have learned is the importance of shipping bees (for so great a distance) in *smaller* packages. A full-sized ten-frame colony will not stand a long shipment as well as a fair-sized three-frame nucleus. It sometimes happens that one lot of bees are more nervous than another. The larger the unit of shipment, the larger will be the relative loss, for the reason that a small lot of bees can not stir up a whole colony. It was noticed that, with both nuclei and full colonies, some of either would be roaring as if in a terrible state of excitement. Wetting them down would aggravate the roar for a moment, when they would quiet down. Excited bees always require more air; and it is such bees, like nervous horses, that wear themselves out long before they get to the end of their journey; hence the importance of a man with a sprinkling can.

This carload of bees is now being distributed around at outyards. From present indications they will gather enough honey to pay the freight; and possibly, if we should have a good shower of honey, their entire cost.

Stray Straws

DR. C. C. MILLER, Marengo Ill.

FRANK E. MILLEN, if you feed sugar to fill the brood-chamber, as suggested on p. 316, please have the first super honey analyzed to see if sugar is in it.

NEARLY 4000 virgins were sent to the 36 mating stations in Switzerland last year, and 87 per cent of them were returned mated.—*Schweiz. Bztg.*, 484. [Some of this might be practiced to good advantage in this country.—Ed.]

D. M. MACDONALD, *British B. J.*, p. 103, says spreading brood "is a pitfall — a plunge into which is accompanied with ruinous consequences when practiced by the novice . . . ; even the old hand, for his own good, should be advised to resort to it but seldom." I have some question whether there is *ever* any gain by it.

BERNARD RIETSCHKE, who died lately, had already (in 1896) sent out into Germany and other lands 10,000 comb-foundation presses, and since then the number doubtless has more than doubled. Your thrifty German doesn't like to buy what he can make himself. More than that, German beekeepers are not blest as we are in being able always to buy foundation with the secure feeling that there is no such thing as adulterated foundation upon the market.

ALL LIFE, says John H. Lovell, p. 268, depends upon the existence of leaf-green, or chlorophyll. If I had known that some years ago it would have saved me some trouble. Madame Salleron is a geranium with ornamental foliage, some leaves green, some white. I wanted a plant all white; tried to root branches with all white leaves. All died without rooting. Then I thought I'd make a sure thing by taking rooted plants and cutting out all green leaves. Every plant died. Couldn't live without the green.

I'M GLAD, J. L. Byer, to see you object to using "hybrid" in place of "cross-bred," p. 264. I wasn't on the carpet when it came into use, so had no chance to protest. But I'll stop using it if you will. But you're 'way off in thinking I'll ever be reconciled to "shook swarming." That's such a vicious violation of grammar that it will always cause a shudder except among those people so illiterate as to say "I was took down with fevernager and was nearly shook to pieces." [While the use of the word "hybrid" is not scientifically accurate, because it is not a crossing of species but a crossing of *races*,

it has become established in all our literature. It would be almost impossible to change it now. We say, in common language, the sun rises, when we know that it does not rise. As a matter of fact, we are doing the rising, because our part of the globe is coming to a point in its revolution where all can see the sun. No, we believe it is better for us to continue using the old term—particularly so as it is shorter than "cross-bred," which is more accurate.

GLEANINGS has always held, I think, that if sugar is fed in the brood-chamber there is danger it might later go into supers; but I don't know that there was ever any positive proof. A careful experiment is reported in *Schweiz. Bztg.*, 149, April 6; to one colony invert sugar was fed; to another, cane sugar, each containing a minute quantity of lithium chloride. April 19 the flow began, and the honey-apartments were opened. May 4 samples of surplus from each showed the presence of lithium, and no lithium in the surplus of a neighboring colony. Clearly it is wrong to feed sugar shortly before giving supers. [We have based our opinion and advice in this matter on the testimony of a number of practical beekeepers. One of the most conclusive, as we now remember it, was the case of a correspondent who fed very dark buckwheat honey just before the clover flow. What was his surprise to find that the sections over the colonies fed with buckwheat contained a good deal of dark honey; while colonies not so fed had white section honey. There was so much testimony along these lines, that we believe late sugar feeding should be discouraged. While sugar syrup in section honey would not affect the quality of the best section honey, yet when such goods are put on the market they are likely to subject the seller or producer to the penalties for selling adulterated goods. It is true a very small proportion of sugar syrup might not be detected by the chemist, but a larger amount would. Moreover, we do not believe there is any advantage in late feeding except to prevent actual starvation and the checking of brood-rearing. There is no harm in late feeding in any case providing the bees are not fed too much. This whole question was thrashed out when the Boardman plan of feeding sugar syrup clear up to the harvest was advocated some years ago. There are some seasons when the expert can practice such feeding without getting sugar syrup into sections.—Ed.]

SIFTINGS

J. E. CRANE, Middlebury, Vt.

It seems as though I never knew a spring when bees spread their brood so fast, considering the weather.

* * *

The March 15th issue of GLEANINGS ought to be placed in the hands of every fruit-grower in the United States.

* * *

Friend Scholl keeps hammering away at "bulk honey." The argument advanced that more can be sold near home in this way is quite true, and of immense value when there is a large crop to be worked off.

* * *

Mr. Doolittle's ideas as to what constitutes a well-to-do man are perhaps of more value than any thing else in the number of GLEANINGS for Feb. 15. They will do to carry with us for meditation in our leisure hours.

* * *

It is bad enough for a busy man to get letters asking for information without even enclosing a stamp to pay for the postage; but when one gets a letter asking for the whole science of beekeeping, on a postal card, it caps the climax.

* * *

Mr. Chadwick, page 155, March 15, gives us some interesting reading, much of it as applicable to this side of the continent as the other. The fact that one man who put up bulk comb honey for only one season created a permanent demand for it is very significant.

* * *

I was very much interested in reading Mr. E. H. Shattuck's article on the tobacco industry in the Connecticut Valley, p. 162, March 15. I visited some of those fields under canvas last year, and found the bees working on the flowers. It is a pleasure to know that something as good as honey can come from this plant.

* * *

"Never too old to learn" is as true as old; and that photo of baby Curt Lundgren, that has been fed on milk and honey from its earliest infancy, teaches us one thing more about honey—that it is good for babies. We might have surmised as much; but we are so stupid as not to think. The land that in ancient times flowed with milk and honey has produced some of the noblest men the world has known, and one of the most virile of all nations—one that no amount of persecution or injustice has been

able to destroy—whose moral ideals have helped to lift humanity higher than any other. Hurrah for "milk and honey!"

* * *

How often we come across something that seems to upset all our fine-spun theories! I found a hive this morning with an entrance large enough to suit our friend Latham or Arthur C. Miller, and it was among my best ones too. Seven large combs of brood before a single apple-blossom appeared.

* * *

Travel where one may, through the length and breadth of the land, the banishment of the saloon seems to be a live question everywhere, and of more moral and economic importance than any other now before the American people. Some day this generation will surely be the object of ridicule for the silly and stupid methods of regulation now in vogue.

* * *

The early spring shows that bees have wintered very badly in Vermont. Where they were able to get a fair amount of honey last year, or where they gathered some the latter part of summer, they have wintered fairly well; but all colonies that were short of honey during most of the season have come through in bad shape, which to me shows very conclusively that the wintering problem depends a good deal on the previous season.

* * *

A good deal is being said about the folly of carrying all one's eggs in one basket. This is especially true of the South. One man raises all pineapples, another oranges, another celery, another tomatoes, another lettuce, and another bees; but it is risky. One man near where I boarded for a time said he made more money playing poker the week after he joined the church than in all his life before. Some one chided him for his unseemly conduct; but he said he could not see that it was any worse to bet on cards than on a crop of vegetables. If the season is favorable, and markets good, you win; if not, you lose. And do we not often tempt Providence when we attempt to carry all our eggs in one basket? If the poultry business can be made to fit into beekeeping as neatly and successfully as it is illustrated in GLEANINGS for Feb. 15, we beekeepers need not carry all of the eggs in one basket, but have two baskets and enough to fill both.

Beekeeping in the Southwest

LOUIS SCHOLL, New Braunfels, Texas.

THE CONFUSION IN REGARD TO PROPORTION OF COMB AND EXTRACTED HONEY IN A PACKAGE OF BULK COMB HONEY.

There exists a great difference of opinion among beekeepers, even in Texas, the home of bulk comb honey, as to the exact way this product should be put up for the market. Although the packages used almost universally are standard, and especially adapted to the purpose, the mode of filling these varies with different beekeepers. The result is that occasional complaints are made by honey-buyers, caused by receiving packages which have not been uniformly packed, due to the fact that the purchases have been made from more than one producer. A first purchase may consist of packages containing more comb honey in proportion to extracted than is ordinarily put in. The next purchase may be made up of less comb honey and more extracted. The producers in each case have, perhaps, tried to be honest, and have been willing to furnish the best that could be supplied. The first tried to give "full value" in putting in as much comb honey as possible; but by so doing found it impossible to make up the required weight of the package. Comb honey being lighter in weight than extracted, it naturally follows that the more of it that is placed in a package the less the weight will be. So while giving full value by putting in more comb honey there must be loss in weight of the entire package.

The other beekeeper, then, tries to give full value by giving full weight. To do this it is necessary to make the quantity of comb honey smaller and the extracted honey larger until the proper weight is obtained. Just what the proportion should be is the question that should be decided upon by producers and purchasers alike, so that a standardized method of packing may be adopted.

No grading rules exist governing bulk comb honey, and it is doubtful whether such are necessary under present conditions. A general rule, understood by all honest producers and buyers, is that the honey must be of good quality and flavor. This means that both the comb and extracted honey, which constitute the product known as bulk comb honey, must give satisfaction so far as quality and flavor are concerned. Rather less attention, perhaps, is given to the color of the honey.

While it is generally understood by many producers as well as honey-buyers that the

gross weight including the package is figured in the price of the honey, there are many who do not know this. This causes much confusion. If prices are quoted on two 60-pound cans to a case, that would mean 120 pounds at so much per pound. Since the regular or standard 60-pound cans do not hold this in net weight, some buyers complain because of the shortage of the contents. This is especially so with retailers who sell honey in small quantities and find that a 60-pound can, for which a certain price a pound has been paid, falls from 1½ to 2 pounds short in weight. It is a matter that should receive immediate attention, and should be adjusted so as to meet the demands of all concerned, as far as possible, before the active shipping season begins.

In this connection the pure-food laws should be considered. It may be well to think over the question of the tags used on the shipping cases. For example, a doubt may arise over the meaning of a tag marked "One case two 60-pound honey," whether it be extracted or bulk comb. The point in question would be whether the label ought to indicate 120 pounds net or gross weight, especially since the case of honey is figured at 120 lbs. at so much per pound. It is very rarely that honey-packages are labeled by the Texas producers; but the cases containing them for shipment usually bear the above-mentioned wording on the shipping-tag. Besides this the price lists quote the various sizes in regular order, "Two 60-pound cans to a case at — cents per pound;" "ten 12-pound friction-top pails at — cents per pound, etc.," which may give the impression that this is intended for the net weight of honey, while it ought to cover the gross weight, because the regular standard cans do not hold the full weight.

We want to hear at once from all who are interested in this matter, as to what steps should be taken toward standardizing the packing of bulk-comb-honey packages, as well as extracted honey, and the proper labeling of the same, to prevent confusion and the possibility of violating the pure-food laws.

Your opinions are greatly desired, and will be appreciated; so, let me hear from you immediately. A few lines on a postal will suffice if there is no time for a letter; but a more lengthy discussion by letter would be preferable.

Conversations with Doolittle

At Borodino, New York.

SECURING WORKER COMB WITHOUT USING FULL SHEETS OF FOUNDATION.

"I wish to know how to have my bees build worker comb without foundation."

"Why do you wish to get along without foundation? Most beekeepers use it in the frames, and get the nicest worker combs."

"Well, I had to spend all the bees brought in, and some besides, to buy sugar to feed for winter stores, and I do not want to run in debt if I can make the increase I wish from combs built by the bees. Then I read the other day in an old bee paper that when bees are storing honey a certain amount of comb may be built at practically no expense, as the bees then secrete wax that would otherwise go to waste."

"Well, there is a grain of truth in such a statement; and if you have no money to invest in comb foundation it may be a wise thing for you to try having the bees build their own comb. But at this season of the year they are likely to build drone comb."

"That is the reason I came over to see you. I want you to tell me just what conditions are favorable for building worker comb, and how I may manage my colonies in such a way as to avoid drone comb."

"I used to let my bees build most of their combs, and at first inserted a frame having a starter of worker comb between two full ones; but finding that the bees would almost invariably build only drone comb, this was given up with the average or stronger colonies of bees."

"Is it true that weak colonies always build worker comb?"

"In a certain sense, yes. But colonies which are considered weak in May often become so far advanced that, when this time of the year comes, they are as determined to swarm as any, even though they may not have more than half the number of bees that a good swarm should. Such colonies will build only drone comb if the frames are spread apart and a frame having only a starter in it is inserted. But take such a colony as this, and deprive it of all its combs save one of honey and one of brood, then insert a frame having a starter in it between these two combs left in the hive, the bees will, forty-nine times out of fifty, fill that frame with worker comb, and then it will resemble any comb built from foundation under the most favorable circumstances. When I want the bees of such colonies to build worker combs I take frames of brood from the weaker colonies

I may have at the beginning of the nectar flow—those too weak to work in sections to advantage—and give this brood to the weaker of the colonies I have set apart for section honey, and then set the weak colonies thus treated to building comb as I have explained. In this way I really make a gain in section honey, as this brood brings the colonies having it to the point where they can take advantage of the harvest; while if it had not been given such colonies would hardly have entered the sections before the flow of nectar was on the wane. If the brood had remained where it was, that colony would not have become strong enough for the sections until the time of the buckwheat yield, and thus little white honey would have been secured from either colony. But with the three or four frames of brood given to the one that would have done very little in the sections, the results will equal those of any of the colonies which were stronger in the spring."

"Is there any way of making the new swarms build worker combs?"

"Yes, if such swarms have a good prolific queen. If you have a ten-frame Langstroth hive, hive the new swarm on the whole ten frames, each having a starter of worker foundation in it. At the time of hiving, put on a super of sections, each row in the super having a bait section, using a queen-excluder between the hive and super. These baits allow the bees to store their first-gather honey, and that which was taken from the old hive, so that comb-building in the frames is only for brood. Two or three days after hiving the swarm, take out five of the frames having the least comb in them, closing up with dummies the space left vacant. The bulk of the bees are thus thrown into the sections, into which goes all the honey not required by the bees and brood, thus keeping storing going on to the fullest capacity, while the queen keeps up with her eggs as fast as combs are built below. In this way five worker combs will be built to perfection, and a good yield will be secured from each swarm."

"You do not try to winter the swarm on five combs, do you?"

"No. When the clover flow begins to draw toward a close, five combs, built by the manipulated weak colonies, are given to the swarm, and in this way the hive is filled out for winter, with *all* worker comb, while the bees always have an abundance of stores unless the season is unusually poor."

General Correspondence

SHIFTING THE HALVES OF A DOUBLE BROOD-CHAMBER TO PREVENT SWARMING

Forcing all the Honey into the Supers by Interchanging the "Laying" and "Hatching" Brood-nests; Separating the Queen from all Brood Every Ten Days Without Making her Stop Laying or Causing the Loss of any Brood

BY J. H. YEOMANS

For a few years I have been experimenting to perfect a "system" of handling bees for the production of comb honey when the beekeeper can not be at home during the day. I have received many ideas from other beekeepers, and have read many others; but usually there are some details that I do not like; hence I should like to submit the following, subject to the suggestions and criticisms of my fellow beekeepers.

My first aim was to have a "hatching story." In the spring, when the hive showed signs of becoming crowded, I added a second story. This delays swarming if added early enough. Then as soon as a honey-flow promised some surplus I raised this top story, putting supers between the two stories with a solid wire screen on top of the supers and below the hatching story. Then I found the frame with the queen and put her into the lower story, shaking the bees from about half of the frames with her. Then in about three days I shook half of the frames again, and in three days I repeated the operation. On the tenth day I cut all queen-cells that I found, and put the "hatching story" on the bottom and the brood-nest on top, and repeated the process.

While performing these operations I noticed that all dead bees were being put in the *lowest depression* of the wire screen. This made me think the bees were trying to carry out the dead ones, and so I hit on the idea of putting a bee escape at the lowest point. This works well except that for the first few days it is apt to be clogged with dead bees. After a few days, when old bees are gone from the hatching story, there is little trouble. I would advocate building a screen with several bee escapes.

My theory is to provide the queen with ample laying room, and to hatch all the eggs she lays up to a certain date, which should be decided by each beekeeper. I think that, where the fall flow is not profitable, it does not pay to raise a lot of bees to feed during a period of no surplus. With me most of my surplus comes in June and July; so I plan to stop my "switching of

stories" about June 1. Then I leave the queen in the lower story and let the upper story hatch out *entirely*. Then I put the upper story away until fall. When I take off all supers my colonies are so strong that for the past two years I have had to winter them in two-story hives.

I have no difficulty in making 100 pounds per colony with Danzenbaker hives. On one colony last season I had 128 sections at one time between the "hatching story" and brood-nest. No matter how cold the nights (our nights in Washington are nearly always cool), the bees will start work immediately in the sections between stories. Each year my system has been improved, I think, in some particulars. By making the bee-escape partition of wire screen, it allows the heat of the brood-nest and supers free access to the "hatching story." I have examined closely on the ninth day, and have found the bees capping larvæ, the eggs of which must have been laid the day I made the switch. Furthermore, I have left the hatching story on in June until every cell had hatched out, proving that no eggs or larvæ are destroyed, and that all sealed brood will hatch.

THE IMPROVED PLAN USED NOW.

My present practice is as follows:

1. In early spring I put on a second brood-chamber.
2. As soon as the queen has laid some eggs in both stories, and it is time to put on supers, I raise the upper story and put supers between them with the escape screen on top of the supers and below the hatching story.
3. I make sure the queen is in the lower brood-nest, or *laying brood-nest*. The top brood-nest is the *hatching brood-nest*. I keep the queen in the laying brood-nest all the time, except that I have found it saves time to wait 24 hours after making each ten-day switch before hunting her in the top story. This gives the field bees time to go down through the escape screen, and they are out of the way, making it easier to find the queen.
4. Ten days later I switch the laying brood-nest to the top of the colony, above the escape screen, and, after cutting out queen-cells, I put the hatching story at the bottom of the colony and make it the laying story for the next ten days.
5. I repeat this every ten days as long as I desire to increase the colony strength. I begin switching about May, and continue the practice every ten days until perhaps June 10. I introduce a young queen to

the hatching story; kill the old queen, and force the bees into the supers for the rest of the season. (A laying queen may be kept in each brood story, but one will have to switch stories as usual or the top story will run out of its supply of honey and pollen.) This system separates the queen from all brood every ten days, without stopping her laying, and without the loss of any brood.

I watch the bee escape to keep it clear for passage of the bees that wish to get out. They go to the fields for honey, come back, and find their *storage* in the usual place relative to the hive entrance. The field bees and those of age of first flight are the first to go below, and they increase the field force just as wanted. The nurse bees are left with the eggs and larvæ, just where they are wanted. They use the honey and pollen stored in the hatching story, which cleans up and makes room for the queen to lay at the next switch. This system separates the queen from all brood every ten days without stopping her from laying, or causing the loss of any brood.

I put on an old comb, badly clogged with pollen, in the hatching story (for an experiment) with the rest of the combs, mostly new, and with little pollen in them. The bees cleaned the comb in fine shape, and raised all the brood.

On the tenth day, when I cut out all queen-cells in the hatching story, and put it below, ample room is provided for the queen to lay, and more added daily by those hatching. In fact, the daily hatching in the brood-nest for the ten-day period the queen occupies it will keep her busy a good part of her time. I have no trouble whatever from the bees clogging the brood-nest with honey. So far I have had to feed every fall, as all the honey, or nearly all, goes into supers.

INTRODUCING QUEENS.

This system is the finest one I know of to introduce queens. Twenty-four or thirty-six hours after you switch stories, introduce your new queen to the top story. As this is occupied only by young bees, they will readily accept her. I have never lost one. If young queens can be obtained early enough, one can be introduced above, and both queens allowed to lay for a week or two, and then the old one destroyed—that is, I let both lay up to the date that the bees will hatch, so as to be of use during the honey-flow. I never use both queens until there are so many bees that they will eat all of the surplus. I did that one year on a colony that promised me 250 pounds. They were so strong all summer that it took two full-sized brood-nests to hold them in

the fall, and my crop was only about 125 pounds. This was a colony from which I had planned to extract in the fall, and had it seven stories high, with bees working in every story.

Swarming has been eliminated in my apiary entirely. A few minutes per colony once or twice a week, at morning or evening, will be sufficient to handle this plan quite satisfactorily. The screen between supers and top story should allow bees to go down and not up. Several bee escapes should be arranged so as to make egress easy.

Spokane, Wash.

AN OUTSIDER IN COLORADO

BY DR. E. F. PHILLIPS

GLEANINGS maintains a department conducted by the Colorado State Inspector of Apiaries; but it may be of interest to mention a few points which came to notice during a recent hurried trip which I had the pleasure of taking through the State. Mr. Foster, who also went with me on this trip, naturally sends items which will appeal more especially to the Colorado beekeepers; but those outside may desire to get some idea of conditions in the State which he might not think of giving. There are some things which may be mentioned which have such an obvious moral that the reader will possibly conclude that these descriptions are being given solely to air personal views. This is not always the case; but the adverse criticism (if it is such) will be accepted gracefully. Another advantage in discussing Colorado beekeeping after a brief visit is that it gives Colorado beekeepers, and especially Mr. Foster, such a glorious opportunity to correct errors which are almost sure to appear. If any such are detected, no person wants to know it more than I; for naturally some conclusions were necessarily drawn from small accumulations of data.

DISEASES.

Since my trip was particularly for the purpose of studying the brood-disease situation it may be as well to say something of that first. American foul brood has been prevalent in Colorado for many years, and is now present in nearly every beekeeping location in the State. In Boulder County, for example, where the beekeepers have had years of experience with the disease they have lost their fear of it, and never allow it to cause much loss. On the western slope, however, where it is seemingly of more recent introduction, the beekeepers are not yet so well informed, or perhaps less con-

fidant on this subject, and, as a natural result, the disease is causing greater loss. This is an exact duplicate of the experience of beekeepers in many other localities; and it may be accepted as proven, that, where a means of educating beekeepers in diagnosis and treatment is provided for a period of years, either disease loses much of its power for harm. The means of education is usually a system of apiary inspection. Without such means, however, disease practically wipes out the industry, as it already has done in many localities in the United States.

However, the beekeepers on the western slope are fast getting in line, and most of the more extensive beekeepers are now in condition to cope with the trouble. They are now organizing county associations, having new inspectors appointed where needed, and are co-operating in a gratifying manner in the work. It is reported that from 5000 to 7000 colonies died of disease in one county in two years, due to unsatisfactory inspection; but this will not be repeated in that county at least.

It does one good to meet a crowd of beekeepers who, when asked how many colonies they have, give their answers in hundreds. We of the East too often confine our beekeeping efforts to five, twenty, or fifty colonies. Wherever the "hundreds" beekeepers are found in abundance it may safely be concluded that bee diseases will soon be controlled; but where the average is five, the problem of control is literally multiplied by thousands. It is also gratifying to hear the crop discussed in carload lots; for while the crop this year is light, the unit of measure is not changed.

I found in different parts of the State a number of beekeepers who were fearful that European foul brood would cause them serious losses. In one place a prominent beekeeper stated that he doubted whether there was a colony in the county which did not show some European foul brood during the season. In view of the fact that we had never had a single sample of European foul brood from Colorado, this was a surprising statement. I found on inquiry that, several years ago, a sample of discolored brood had been sent to an "expert" for examination, and he had pronounced it "black brood." This was before the name European foul brood was in use. Since the same condition is now widespread, and since the beekeepers were led to accept the expert's (?) dictum as gospel, the natural conclusion was that the disease now called European foul brood was widely distributed. The condition referred to is the so-called "pickled brood." No colonies have died of

the disease, which is enough to cause one to doubt the accuracy of the diagnosis; and when the symptoms of the prevailing trouble were described they did not at all resemble European foul brood. Such expert advice can not be considered as of extraordinary value to the industry. "To err is human," but before expressing an opinion in such matters one should consider the anxiety and expense that may follow the receipt of the reply. European foul brood may exist somewhere in Colorado, but no samples have so far been received from there by the Bureau of Entomology, and it seems probable that we should have received some intimation of the disease if it were present to any extent.

Several years ago the beekeepers of the State were instrumental in having a law passed providing for a county system of inspection, the inspector to be appointed by the county judge on petition of the beekeepers. County inspection is usually far from perfect, in that the inspectors in the individual counties do not co-operate. It is, too, not always possible to get a good man in each county to take the position, even if the various judges or other appointing officials were always anxious to appoint the best. It would be easy to offer other objections; but the same criticisms, or others just as weighty, might be offered against almost any system.

At the last session the State Legislature passed a bill providing for State inspection under the supervision of the State Entomologist. This is similar to the plan in several other States; and in such cases the results are highly gratifying. This has been the recommendation of the writer for several years; and it is pleasant to know that, in several States and Territories, the beekeepers have been and are of the same opinion as to the desirability of the plan, and that in seventeen cases it is in force to-day. It may be mentioned parenthetically, that in 1906 there were but two such laws.

Prof. C. P. Gillette, the State Entomologist, has for several years been interested in bees, and has written several bulletins of value to beekeepers. This is an increased assurance that his supervision will be for the best interests of the beekeepers. His deputy in the work is Mr. Wesley C. Foster, of Boulder, who comes of good beekeeping stock, and who counts his colonies in hundreds. Since Mr. Foster is so well known to GLEANINGS readers no further introduction is needed. Not being a lawyer, an expression of opinion is somewhat risky; but it looks from the road as if both laws were still in force, for the new law seems not to repeal the old. This is work-

ing out in a satisfactory manner in that the county inspectors are still at work, but the State Inspector can guide and direct the work in a harmonious manner, and step in to help where he's most needed. In fact, the State Inspector has declared his intention of working only in counties where county inspection is maintained. The State work could not be begun until August; but Mr. Foster has already made a careful study of conditions all over the State, and has spent several weeks in harness. It is too early to report on results, but it seems easy to predict that they will be good.

SOURCES OF HONEY.

Colorado is justly noted for its alfalfa honey. As is, of course, well known, alfalfa is grown in Colorado only under irrigation, and usually three crops are cut each season. If the alfalfa-growers would only cut their alfalfa to suit the beekeepers, Colorado would lead the country in honey crops; but the hay is usually cut just as it comes into bloom, except, of course, where a seed crop is desired. The increase now being made in the irrigated areas is naturally offering new locations for beekeeping; and if alfalfa remains a leading crop by the time the total irrigable area of Colorado has water on it we may look for train-load crops of honey. With the increase in the price of alfalfa hay, however, there is a marked tendency to cut earlier, and this has already hurt the honey crops. Cleaner cultivation and better care of irrigation ditches have already in some localities decreased the amount of sweet clover, which is a valuable addition to the honey resources. If Colorado irrigation water comes to be carried largely through pipes, as it is in parts of the West, the amount of sweet clover will be reduced with serious results to beekeeping. These factors are said to be largely responsible for the recent failures of the honey crops in northern Colorado, which have resulted in the shipping of several carloads of bees to new fields in Idaho, Texas, and elsewhere.

Every one knows that Colorado is celebrated for its deciduous fruits. This brings to the beekeeper a bountiful supply of early nectar; but colonies are usually not in shape to store any surplus, any more than they are in the East; so that, as elsewhere, the fruit-grower profits more by the work of the bee than does the beekeeper.

The Rocky Mountain bee plant (*Cleome*) is abundant; but at the places visited little mention was made of its being a main source of honey.

COMB HONEY.

Probably the majority of the beekeepers I met in Colorado are producers of comb

honey. Alfalfa honey is beautifully white, and the comb honey is certainly choice-looking. As an objection to the production of comb honey in an alfalfa region may be mentioned the fact that the honey granulates quickly. This is, I understand, true mainly after it is extracted, however. Furthermore the honey-flow is not excessively rapid, rarely exceeding a gain of five pounds per day, while three pounds would probably be a good average in a good season. The flow extends intermittently from some time in June nearly or quite to September 1, extending over the periods of the three cuttings of alfalfa. Such conditions would not appear ideal for comb-honey production to an eastern comb-honey man. However, the demands of the market seem to indicate that comb honey is more profitable than extracted, and most beekeepers seem to prefer it. There are exceptions to this general rule, so that Colorado differs not at all from the East in having arguments as to the desirability of each kind of honey production. There seems to be no hope of settling this question on this side of the Styx, so I refrain from starting an argument on the subject.

Washington, D. C.

To be continued July 15

THE RED FLOWERS OF NORTH AMERICA

BY JOHN H. LOVELL.

There are only 257 red flowers in our northern flora. Their hue is due to a soluble red pigment called anthocyan, dissolved in the cell sap. It is also of frequent occurrence in the stems and leaves of herbaceous plants, as well as on the under side of aquatic leaves and of radical leaves growing in rosettes, as in the mustard family. It is particularly abundant in early spring and late fall, and at alpine heights. It probably serves to convert light rays into heat, and thus aids the plant in its growth under cold skies.

Red anthocyan is always acid; for instance, when a red rose is dipped in a weak alkaline solution (ammonia) it becomes blue; but if it is then treated with a weak acid its red hue returns. In this way its color may be changed repeatedly. Red coloration is much more common in foliage than blue, because the cell sap is usually acid. We have undoubtedly here the explanation of the difficulty florists experience in their endeavors to produce a blue rose. The rose family exhibits a marked tendency in stem, leaf, bud, flower, and fruit to develop red coloring—a tendency due to the strong acidity of the cell sap. Of

the 148 flowers in eastern America, 4 are green, 82 white, 39 yellow, 19 red, and 4 dull purple; but blue does not occur at all. A blue rose will be produced only when a flower is obtained in which the cell sap changes from acid to alkaline. This actually happens in the common borage, the corolla of which is at first red but later turns blue.

It was long believed that the same species could not produce yellow, red, and blue flowers. But this doctrine, to use the words of Dr. Lindley, "must now be laid up in the limbo of pleasant dreams." This supposed law is contradicted by the hyacinth, pansy, cardinal larkspur, and many other plants. Though both red and blue coloring never occur among the wild roses, a hyacinth has been seen to produce a perfectly pink and a perfectly blue blossom on the same truss; another truss had blue flowers on one side and red flowers on the other, and several of the flowers were striped longitudinally red and blue. In the sweet-scented violet (*Viola odorata*) blue cells may occur above and red cells beneath.

It is a very common occurrence for white flowers to change to red, and every stage of this transition is placed before us by the rose family. White and red roses may occur on the same root, and white and pink flowers have also been seen on a single plant of the snapdragon. Several kinds of pinks are at first white, but later change to red. This change of color may be brought about by a strong stimulus, as when lowland white flowers are grown under the intense light of alpine heights, or are stung by gall-flies. When a white flower of the common thorn-bush is stung by a gall-fly, all the organs become bright red, and increase in size.

Mr. A. I. Root has already called attention in GLEANINGS to the violet-blue rose offered for sale by florists for the first time during the season of 1911.

There are a number of families in our flora in which red flowers are common, but blue is wholly absent. The buckwheat family contains 11, the orchis family 22, the rose family 19, the mallow family 13, the evening-primrose family 10, the heath family 10, and huckleberry family 11 red-flowered species; but there are no blue flowers in any of these families. While this is primarily due to the acidity of the cell sap, it will be noticed that most of the flowers are regular in form and but little modified. In other families, such as the pea, gentian, and mint families, both red and blue flowers are common.

There are many red lilies, orchids, and pinks, which are great favorites of butter-

flies; and, therefore, it was long thought that butterflies, at least the fire-red kinds, preferred red hues. But further proof seems desirable. Red flowers are most abundant in the pink family, which contains 22 species. The pinks exhibit a wonderful variety of red shades, varying through rose, pink, and deep red to scarlet and crimson. The petals may be dotted or marbled with white, and they are often notched or fringed, and surmounted with a corona of scales. The scent is aromatic, and the nectar lies at the bottom of a slender tube where it is often inaccessible to all insects except butterflies.

Trees with red flowers are rare, but shrubs are common. Of trees, the peach, red buckeye, and red maple are the best-known examples. There are many red-flowered shrubs in the rose, heath, and huckleberry families. Undoubtedly the two handsomest North American shrubs belong to the heath family. They are *Rhododendron maximum* and *Kalmia latifolia*, or the mountain laurel. Asa Gray says that in North Carolina they adorn the valleys and mountains in immense abundance and profuse blossoming of every hue from deep rose to white.

It is rather remarkable that, among the 571 species of *Compositae*, there are only nine red flowers. On the other hand, 13 species, or one-half of the mallow family, have pink or red blossoms. In the buckwheat family the petals are wanting, and the flowers are small; but the calyx is often red, and sometimes the seed-vessels, stems, and leaves. In the poppy family the flowers are crimson, scarlet, and yellow, and the sap is also yellow or red. The wild columbine (*Aquilegia canadensis*) produces scarlet flowers which are yellow inside but rarely all over. There are two other species in our northern flora which exhibit similar coloring. They are the trumpet honeysuckle and the Maryland pinkroot. The former is sometimes yellow throughout. All three of these flowers are visited by hummingbirds. Another hummingbird flower, the cardinal flower, is unsurpassed in the brilliancy of its coloring by any other red flower.

The number of red flowers which are valuable to the beekeeper is much smaller than those which are white or yellow. The most important are the peach, huckleberry, red and crimson clovers, and the great willow herb, or *Epilobium angustifolium*. In New Zealand thousands of acres of waste land are covered by New Zealand flax (*Phormium tenax*), which produces a beautiful red flower and yields a most delicious honey.

Waldoboro, Me.



FIG. 1.—Owl Creek apiary of A. B. Marchant, near Sumatra, Fla. But for some hard work in raising the hives up on empty supers this yard would have been lost. It was intended to fill the carload order for bees from this yard; but water made this impossible.

SHIPPING BEES BY THE CARLOAD FROM THE SOUTH TO THE NORTH

Migratory Beekeeping

BY E. R. ROOT

While I was at Mr. Marchant's in Florida, I engaged his son Ernest, who was his father's lightning operator at extracting, to come and work in our yards. The demand for bees last year was usually heavy—so much so that our colonies were comparatively weak—especially for so severe a winter. Along the last of February we sent Mr. Marchant down to his father's to bring back a carload of bees in three-frame nuclei. We had figured that we could put 500 such boxes of bees in an ordinary car. Nucleus boxes, including the queens, were shipped in the flat by freight, nailed up in Florida, and after the bees got to breeding well the boxes were filled with bees and brood. On the 6th of May the bees were loaded on to the boat at Patrick's Landing, and then carried up the river to Bainbridge, where they were put in a car for Medina.

Unfortunately for Mr. Marchant there were heavy rains and floods throughout the entire South, particularly in the Appalachicola region. The Owl Creek yard, from which the senior Mr. Marchant expected to make up this order of 500 nuclei, came near being drowned out as will be evident from Fig. 1, which view was taken when the water was at its greatest height. A. B. Marchant is seen at the left, and Ernest Marchant is at the right. It appears that

they had a strenuous fight in saving the bees. This they did by raising the hives up on supers to keep them out of the water, for the hives were already on hive-stands that raised them 18 inches off the ground. The water kept rising until the gasoline launch was called into play to help out. It was impossible to make any general landing, and hence our order for nuclei was filled from another yard. The first carload arrived on the 13th of May, being just a week on the road. The bees were loaded into an open cattle car, one tier being placed on a framework just above the floor to secure bottom ventilation, and another tier about four feet above the first tier. In the center of the car was a little space for a cot, some bedding, a barrel of water, a bee smoker, several sizes of big nails, and a heavy hammer. Mr. Marchant was supposed to ride in the caboose; but the weather was so changeable that he took up his headquarters in the car with the bees.

When the bees started it was insufferably hot, and they needed sprinkling. Then it rained; and when the car almost reached its destination a fall of snow came on. The result was that Mr. Marchant was kept busy in shading the bees from the sun with strips of muslin which he carried with him; next changing the muslin to cut off the wind and the rain, and finally throwing the muslin over the tops of the hives, including all his bedding, to keep out the snow and cold. He had all conditions of temperature from 100 in the shade down to freezing; and as he relates his experience he says the common cattle car, to put it mildly, is no "Pull-

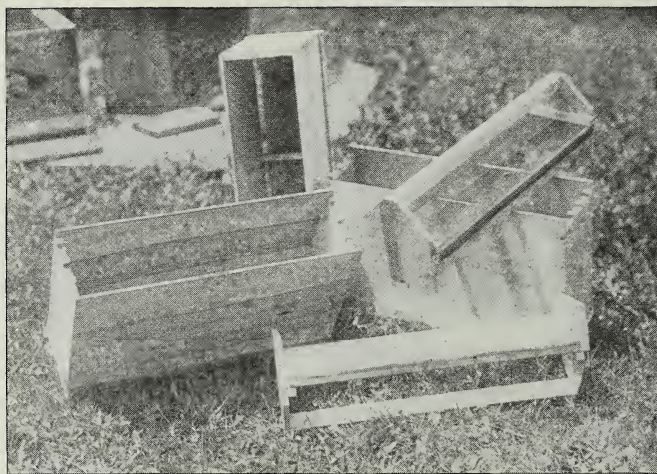


FIG. 2.—Empty three-frame nucleus shipping boxes that were used for the carload. Note that the boxes are made of light thin stuff, and screened top and bottom.

man." I said to him, "Why didn't you ride in the caboose, Mr. Marchant?"

"I did not dare to," he said. "The railroad people gave me an old rickety cattle car that I was really afraid would fall down on me."

Whenever he saw it was beginning to give way in places he put in additional braces and plugged in more nails. Next the bees would need water. Then they had to be screened from the cold winds at night. The result was he had to be up and doing almost night and day.

"No, sir," said he, "carrying 500 nuclei in an open cattle car 1400 miles is no snap. One has to secure his dinner on the run, grabbing up a sandwich or pie between stops. When the car was changed from one division to another I had to beg and almost threaten the conductor and his crew to get them to take my carload of precious freight in the next train that pulled out. They would tell me that the car could wait till the next day—that they were too busy, etc. I told one conductor he *had* to take the bees or there would be trouble."

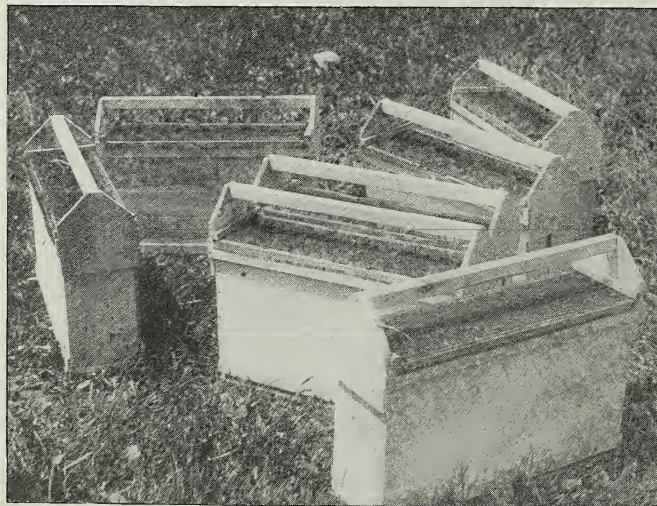


FIG. 3.—Three-frame nucleus shipping boxes filled with bees. The screen tops (with the convenient cross-rail for a handle) are secured to the nucleus box proper with two screws at each end. Such boxes are very handy for moving bees, either for shipping or carrying from one part of the yard to the other. They are also very handy for carrying combs.

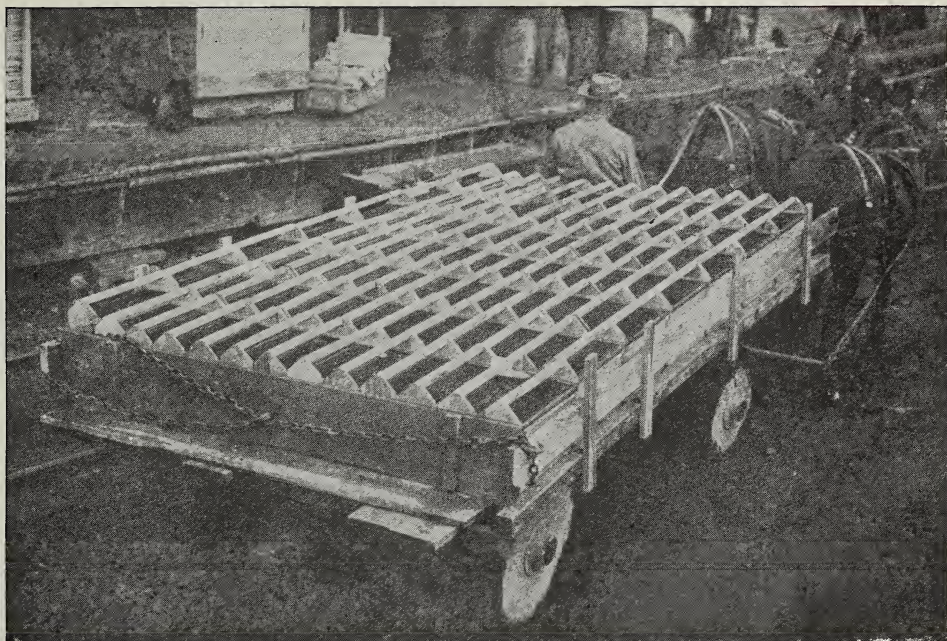


FIG. 4.—Wagonload of 91 nuclei *en route* to the Basswood yard. A low-wheel wide-tired wagon is just right for loading and unloading, and for carrying bees from one yard to the other. The wide tires make it possible to get over soft sod when the ground is wet. We use this wagon with the team. We also have a light spring wagon and a horse for small loads.

While railroad men are used to handling perishable freight, they seem to think bees can lie over awhile and cool off, and that it would be better for them.

In spite of the extremely hot weather, in spite of the cool nights, and in spite of the snow, rain, and hail, the bees came through in splendid order. Not a particle of brood was destroyed, and, so far as we can discover, all the unsealed brood was left intact. More remarkable still, the queens kept on laying in spite of the bumps and jolts and the changes in temperature. When the bees were unloaded at Medina we found young brood in all stages, and eggs, while a good part of the sealed brood had been hatched; for it is a well-known principle in shipping bees that it is always advisable to send only *sealed* brood. Unless the bees are watered they will lick up every particle of unsealed brood.

But Mr. Marchant prevented this by watering the bees three or four times a day. This was done with a watering-pot, spraying water right on the wire cloth. The frequent sprayings, he thinks, prevented the bees from destroying their unsealed brood, as they usually do when sent by express in the usual way. Not only did the bees continue to rear brood, but some of

the queenless nuclei kept on cell-building; and when they arrived there were several that had virgins running loose; and when they had no opportunity to fly, there seemed to be no disposition on their part to fight, on the principle of the survival of the fittest.

Still again, there were several nuclei that had caged queens; and in every one of these the queens were released, and in some cases had laid eggs. All together, I think this was one of the most successful shipments of bees ever made. Briefly stated, the secret of that success was in giving the bees plenty of water as often as they needed it, ventilation top and bottom, and protecting them from the hot sun, and, I might say, from the wintry blast at the latter end of the journey; for it will be remembered that considerable snow fell here on the 12th and 13th of May.

Let us now take a look at the nucleus boxes themselves; for no small part of the success was due to the style of the carrier. The reason we decided on three-frame nuclei was to get a large number of queens and frames of bees and brood with as little weight as possible. In Fig. 2 the construction of the carrying-box will be apparent. The ends are made of 7-16 lumber, while



FIG. 5.—Taking the bees out of the nucleus boxes and putting into the hive. These boxes of bees are just right for strengthening up weak colonies in the apiary.

the sides are 3-16 and nailed on to the ends. The ends of the top-bars of the frames rest on notched cleats. The bottoms of the end-bars are held by similar notched cleats nailed crosswise near the bottom on the inside of the ends. The under side of the nucleus is covered with wire cloth, and below this, about half an inch, is a false bottom of wood. The top of the nucleus is made with gable ends with a cross-cleat, that is used as a handle in picking up the nucleus boxes. Besides the hand cleats are two strips of 3-16 lumber that hold the wire cloth. A couple of cleats at each end securely fastened to the cover hold the frames in place; and when this cover is secured it is impossible for the frames to shuck up and down or against each other.

In Fig. 3 we show the nuclei filled with bees, ready to load on the car or wagon.

Fig. 4 shows 91 nuclei loaded on to a wagon with small wheels and wide tires. This was the first load out of the car, *en route* for one of our outyards. The advantage of *low wide-tired* wheels in loading and going over soft ground in going to the beeyard in the back lot will be apparent.

On arrival at the yard one nucleus box was placed by the side of each one of the empty hives. Then the boys went around,

opened up the hives, lifted out the frames of bees, and put them in a hive on their permanent location. This was followed up two days later with frames of empty combs for queens to lay in.

This shipment of bees arrived just before the opening of fruit bloom, so that they were able to gather honey that amounted to nearly the cost of the freight on the bees; for honey from natural sources will do more to stimulate the rearing of brood than any thing that can be done in the way of artificial feeding.

So successful was this shipment of bees that we sent back this same man, Mr. Marchant, to his father's place for another carload; and a telegram just received informs us that they started to-day, May 27.

We expect this carload of bees to reach us in time to catch our northern clover and basswood. If we have any kind of flow, the honey secured should go a long way toward paying for the cost of the bees, and at the same time leave us the bees and the queens to supply hundreds of beekeepers who have lost heavily during the winter.

The first shipment of bees was loaded on to a boat after the main honey-flow from tupelo was over. The idea was to utilize the bees in Florida until the flow, and then



Mr. Beaudin's residence, with apiary in the background.

ship them north to catch another flow. The first car was to reach the fruit bloom, and the second car, if nothing unusual happens, will be here in ample time to get in good shape to catch the basswood and clover.

MIGRATORY BEEKEEPING.

Migratory beekeeping has not been practiced to any extent in the United States. One difficulty is that our distances are so great, and the freight is so high, that most beekeepers lack the nerve to try it. Quite a few beekeepers in Northern Michigan have managed, however, to catch their clover and basswood, and then move northward by car to catch raspberry and fireweed. It is my opinion that migratory beekeeping might be practiced to more advantage than it has been.

Just now the beekeepers in some western States are moving their bees by the carload, after they secure one crop, into California to catch the alfalfa or sage that comes on later. At this writing, May 27, it is stirring up a hornets' nest, or, rather, a bees' nest, among the California beekeepers, who fear the introduction of disease, and who complain that their territory is already overstocked. The fight is on, and how it will be settled remains to be seen.

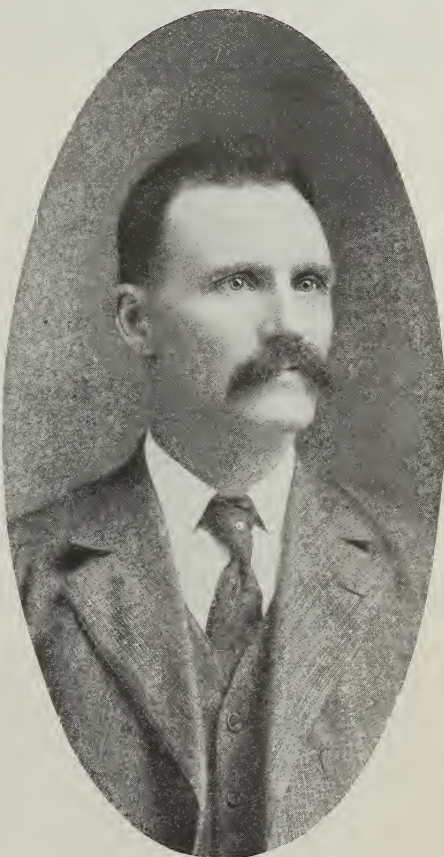
A SUCCESSFUL FRENCH CANADIAN BEEKEEPER

BY A. L. BEAUDIN

In April, 1893, I bought my first colonies of bees, a copy of the *A B C of Bee Culture*, and Dadant's *Langstroth*. Since then I have bought many colonies as well as a large quantity of honey. In 1910 I increased from 180 colonies in the spring to 256 good colonies in the fall, and took 26,000 pounds of extracted honey and 256 pounds of wax from cappings. All of the bees were in one apiary, and in nine-frame Lang-

stroth hives. I have one capping melter and one six-frame automatic honeyextractor with a one-horse-power gasoline engine for driving it. I am much pleased with the outfit.

In the fall of 1911 I took 10,000 pounds



A. L. Beaudin, the French Canadian who increased from 180 colonies to 256, and extracted 26,000 pounds of honey.



A. L. Beaudin's 250-colony apiary at St. Chrysostome, Quebec, Canada.

of extracted honey from 170 colonies, and 120 pounds of wax from cappings.

The Universal Simplicity feeder, which I invented, is a feeder *par excellence*, as it can be adapted to all styles of hives, and one person can feed 200 colonies with it in 30 minutes, without disturbing the bees. The size is 6x12 inches, and 5-16 high, with capacity of about 10 ounces. This feeder is made of tin, and in order to secure the best results it should be exactly plumb. I have used it about 12 years without adapting it until recently to different sizes of hives.

St. Chrysostome, Que.

BOOK-KEEPING NECESSARY

A Book for Each Kind of Record to be Kept, Better than One Unwieldy Volume

BY LEO ELLIS GATELY

In any successful business, operations must be mathematically evolved and systematically conducted. It should, therefore, be apparent that, if the apiary is to be put upon such a basis, no hit-and-miss practices can be tolerated in record-keeping.

In both books and publications on bee culture, this matter appears to draw forth scant discussion; and what is found seems intended more to arouse interest in the sub-

ject than to outline any formulated plans or up-to-date methods. If an improved method is given, the chances are that its supposed superiority will be based chiefly upon the doubtful grounds of ease and rapidity, with an utter disregard of the more essential features of accuracy and permanency. Would it not be far better to devote considerably more time and patience to a precise and comprehensive system?

In an endeavor to keep a complete record of all that transpired in our apiaries we struggled for years through oceans of marks, tags, and memoranda, testing about every scheme in existence. This labor would, in fact, often assume such proportions as seemingly to overshadow all other duties. There are, no doubt, plenty of others now making a similar mistake.

When unimportant details keep one until so late at night that the big things get put off till some future time, there is room for improvement in that system of accounts. Neither it is always neglect that tangles balances and reports. Instead of one bulky volume in which to enter tiresome memoranda, an endless amount of bookkeeping drudgery will be eliminated if a complete set of small ones is kept, divided and subdivided into all necessary departments. These may bear such distinctions as:

Day-book; weekly queen-rearing; month-

ly bought and sold; annual colony-record, and such others as the requirements may demand. The pages of these are ruled off, and in the separate spaces headed according to the character of the record being kept. The annual colony-record will, for instance, be headed at the top of each page, something like this:

Date; number of colony; kind of hive; queen—age; supers, given—removed; honey—lbs.; feed, cost; variety of bee; gentleness; swarming; supersedure; capping; rating; colonies on hand.

With such a set of books it requires but a moment to enter *permanently* the full details of any operation or transaction; and it is then possible, for all years to come, to know at a glance exactly what each colony has done or is doing. While it is well to use some system of temporary hive-index, with tags or their equivalent, records are lost with each change that may be a daily occurrence, and can never become more than a minor part of any well-regulated recording system.

As the majority of beekeepers are now beginning to take great pains in making careful selections for breeding stock, it is now, as never before, becoming necessary not only to watch the progress of the hatching cells, but to make some definite and lasting record of the yield and general char-

acteristics of individual colonies; for otherwise there will be no possible means of determining which are really superior, as the colony that last year did so splendidly may this season prove an utter failure, or the reverse. The importance of keeping such records in permanent form should, therefore, be obvious, as it is an established fact that one summer is wholly insufficient to prove the true value of any queen.

Ft. Smith, Ark.

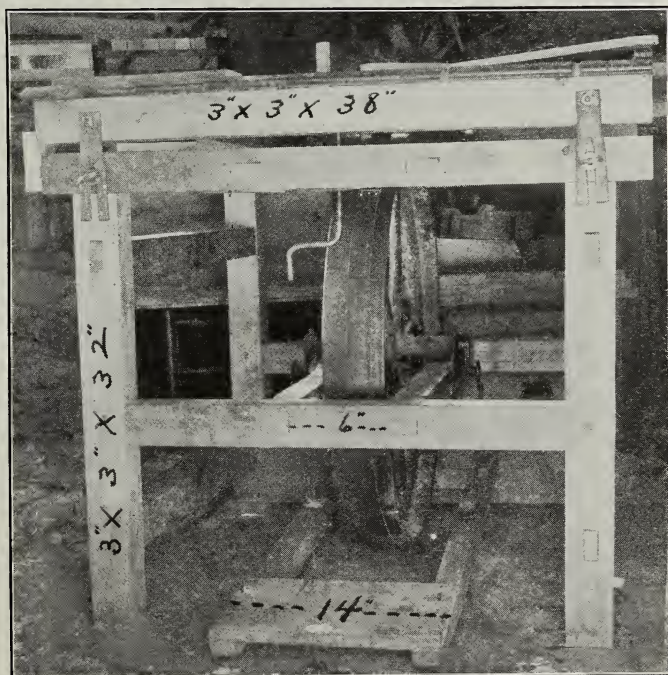
ORTON'S HOME-MADE SAW

Further Particulars Regarding it

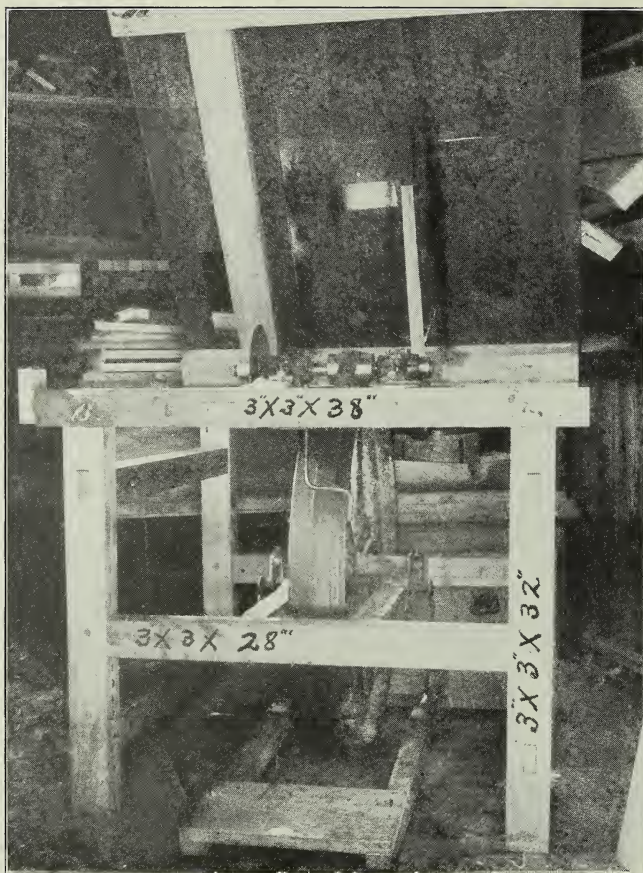
BY PERCY ORTON

Ever since you published the description of my home-made foot-power saws, p. 627, Oct. 15, 1911, I have been besieged with letters asking about the details of their construction. The two illustrations of the better-working saw of the two I made give dimensions, etc. Many refrain from making a start with bees on account of the high price of factory-made hives. Those who are ingenious, and have plenty of good pine lumber, and a cheap home-made buzz-saw, can easily make good hives.

The frame is 3x3 hard wood, 32 inches high, 34 wide, 39 long. The 30-inch drive-



Detail of construction of Orton's home-made foot-power saw.



The table raised, showing saw and mandrel beneath.

wheel should be of iron, with either a three or four-inch face. It may be a plain wheel or an old mowing-machine wheel "trued up" by a machinist. The ball-bearing hangers are from an old grindstone.

The 8-inch saws should have a hole for a one-inch shaft, and should be very thin, like those used on the Sears & Roebuck foot-power saws.

My mandrel came from Sears & Roebuck. The length of the 1 1-16 shaft is $16\frac{1}{2}$ inches; the diameter of pulley, $2\frac{1}{2}$; face, $3\frac{1}{2}$. The whole mandrel, including the pulley in the center, cost me \$3.53. I use a canvas belt; but any belt $1\frac{1}{2}$ to 2 inches wide is suitable.

The table was made from the leaves of an old extension table. It is hinged at the back, and raised and lowered by the screws in front of the drive-wheel.

This is a homely machine, but it runs easier than a No. 4 Barnes saw that I own,

or a Sears & Roebuck that a neighbor of mine has to do carpenter work with.

Northampton, N. Y.

ADVOCATING A STEP BACKWARD IN BEE-KEEPING

BY WALTER S. POWDER.

In all the different branches of agriculture there is none quite so interesting and fascinating as beekeeping; and thousands are making their first efforts for a start annually; but when we follow them in their trials and hopes we find a very large part of failures which should not happen. Just as long as this condition exists we know that there must be something lacking in our books and magazines, and in the teachings that are being followed. I have met with hundreds of instances where extravagant outfits of supplies were secured, a

year or two of pleasure and hope, and then all were discarded as a failure, while the same amount of money invested in honey would have supplied the family for years. Just as long as these conditions exist we are forced to admit that there is something wrong with our industry. There is a demand for simplicity, and safer promises for returns from investments; and we have drifted into a system of manipulating hives that has become standard and yet not up to requirements.

The beginner has the impression that he must secure the very latest equipments described in the catalogs, believing them necessary because in general use, and it seems that all of us have reached this same conclusion. We discarded the two-pound section long ago to adopt a standard pound(?) section to meet commercial demands; but to-day we have no section of comb honey weighing, uniformly, a pound to the section. We admit that bees stored more honey in the larger section; but we sacrificed it for the smaller, it being most in demand; but it is still a question whether the quantity produced would not have increased the profits for the producer. We all *think* we must use separators or fences in producing comb honey, and yet we know that any plan that divides the cluster during comb building retards the progress greatly. Our seasons for surplus honey are short at the best; and how disappointing to close the season with a few small unfinished sections between separators, when, with different and more simple equipment, results might have been more satisfactory! I sometimes think that the beekeeper known as the "old-fogy type" is ahead of his "up-to-date" competitor when I see the results. For instance, the man who produces comb honey in shallow frames or full-size brood-frames, and then cuts it out, adds some extracted honey, and puts it up in a neat container with his label. He would not consider sections or separators, has less swarming during the flow, his product is always in demand, and the method paves the way for safe winter preparation.

The demand for broken comb honey or bulk comb honey is excessive, and is increasing. One can produce both comb and extracted in the same yard; and with the same equipment the quantity of comb produced on this plan will be much greater than what could be secured in sections where clusters of bees are divided. Some will say that the objection would be granulation when put up. Comb honey that has not been bruised in shipping will keep a long time without granulating, and packages could be put up as required, always fresh

and clear; and even if some did granulate we begin to know that granulated honey is not to be snubbed. There is a most excellent illustration of this method in Texas. Texas is a large producer of very fine honey, and yet we do not hear of Texas honey on our overstocked markets. The reason is, they have learned how to create a home demand for their product; they have a good thing, and they use it themselves. I am informed that every family, rich or poor, has a can of broken or chunk honey in the house. It reminds me of the story of the traveler at a hotel. He ordered an extra-tender porterhouse steak and accessories; but the waiter halted him with the remark that, if the boss had a steak like that in the house, he would eat it himself.

Beginners become confused about hives as to wintering qualities, and should be impressed through books that a strong colony with an abundance of stores will survive in almost any kind of hive. The severe losses of the past winter can almost be traced to lack of stores—bees simply starved to death, but often in the midst of plenty. If bees were overfed in fall it would add much to their safety in winter, and they would produce surplus earlier the next season if the brood-chamber were well supplied.

Indianapolis, Ind.

SWARM PREVENTION

Three Methods for Effecting it by the Use of Large Hives

BY GARRISON H. ADAMS

There are several good methods of keeping bees from swarming. The best is one which I have used to a great extent for 25 years. Others are using it upon my recommendation, and find it a great success. It is simple, and easy to carry out, with very little work. The hive must be the right size. The one which I use I call my non-swarming hive. First, the beestand is made 18 inches wide and 28 long, of two pieces of 2x4 hemlock studding. The stand boards are nailed to these at its ends. The whole thing is then placed on four bricks which make it nearly 7 inches high.

The hive, outside measure, is 13 inches high, 14 wide, and 25 long. The brood part contains 16 frames about the same size as the Gallup. All of the frames must be used for the brood, and a good queen will fill nearly all of them early in the season.

The frames are made very easily and cheaply from $\frac{7}{8}$ white-pine lumber. The top and bottom bars are one-half inch thick. The sides are the same width, but

made one-fourth inch thick. The projections of the top-bars are eight-penny wire finishing nails. Frames made in this way are more durable. The bees do not stick them fast, and they cost less. The frames run crosswise of the hive. I make the hives so that there is one-half inch above the frames, and a little more than an inch below in the brood part. In the upper hives there is $\frac{1}{2}$ inch above the frames and $\frac{1}{2}$ inch below. The entrance is made in one of the ends of the brood part.

The comb-honey super has wide frames the same size as the brood-frames, except that they are two inches wide, and they are made in the same way with two wooden separators 5-16 inch thick and 4 inches wide, nailed to one side of the wide frame.

The sections are $1\frac{7}{8}$ inches wide on all four sides. A wide frame will hold 6 one-pound sections when well filled with honey. The sections will be longer up and down than they will be the other way. One super will hold 10 wide frames with 60 sections, or 12 extracting combs.

As a rule I have used the hive three stories high, and have not had a swarm from them in 25 years. During that time I have had but one swarm from two-story hives.

It is quite an easy matter to coax the bees to work in the sections in this hive by placing an extracting comb in the center of the comb-honey super. Comb and extracted honey can be easily produced in a hive of this kind at the same time. A section of honey can be removed as soon as sealed before the bees soil it by running over it. I have often had the two upper stories filled solid with sealed honey, and yet the bees did not swarm.

This hive should be ventilated at the bottom, when the bees are out of the hive, by putting a piece of thick lath under each front corner of the hive. This will give the bees a two-inch alighting-board on three sides. Shade the hives if they stand in the sun.

BY INTRODUCING YOUNG QUEENS.

In order to prevent swarming when small hives are used, all that is necessary is to remove the old queens and introduce young ones that have just commenced to lay. These small hives can be packed with sealed brood, and the bees will not swarm during the whole season, whether running for comb or extracted honey. These queens, too, as a rule, lay better than older ones. I prefer to raise the queens myself, and then I know surely that they are young, as this makes all the difference in the world. It is quite an easy matter to have a lot of choice and vigorous young queens reared by the time the swarming season begins. If the bees

have been properly wintered they should with good spring management be strong and vigorous in early spring, and the young queens reared from such colonies will be prolific. I have never had a swarm when I have used this plan. If the bees cluster out on the front of the hive, raise the hive and put a piece of thick lath under each of the front corners, and give more surplus room above, and shade from the sun. I keep plenty of thick spruce lath in my apiaries, and find it useful for many purposes.

Perhaps some one may wonder what I do with the old queens that are to be removed from the colonies. If the queens are good layers a place can be found for them. For instance, the old queen and two of the poorest combs of brood in the hive may be removed, together with a few bees, and put in another hive of the same color. The queenless part can be moved to a new stand some distance away. Put the hive containing the old queen and the two combs of brood with a little honey in the two combs on the old stand, and fill out with empty worker combs or frames of full sheets of worker foundation. All the field bees will return here; and by buckwheat time this part of the colony will be ready to gather surplus from this source if the season is a good one, provided they have been given proper summer management.

After two days, fill out the queenless part with large combs of brood about ready to hatch, and introduce a young queen that has just begun to lay. She will be gladly received by the bees. If honey is coming in, put on the super for either comb or extracted honey. The colony will not swarm that season; but extra ventilation may be necessary at the bottom.

BY REPLACING COMBS OF BROOD WITH EMPTY COMBS.

At the swarming season, when the bees are very strong and seem ready to swarm, open the hives and remove from each four or five of the best combs of brood almost ready to hatch, and destroy all queen-cells which are not needed elsewhere. Shake off all the bees from the combs into the hives. Care should be taken not to lose the queen. Fill out the hives, from which the brood was taken, with empty worker comb or frames of full sheets of worker comb foundation, alternating until the hive is full. Ventilate the hives at the bottom by putting a thick piece of lath under each corner at the front, and give plenty of surplus room at the top. Any colonies treated in this way will not be likely to swarm. Shade the hives if they stand in the sun.

The combs of brood taken can be given

to colonies having young queens just commencing to lay. Colonies having young fertile queens can be given a large amount of brood. You can fairly pack it in, and they will not swarm—at least this has been my experience for the last 34 years of continuous beekeeping.

This last method, combined with the second one, will keep bees in small hives from swarming, and both should be employed at the same time, as they are dependent on each other.

Troy, N. Y., March 26.

SHALLOW DUMMIES IN TEN-FRAME HIVES

Contracting the Brood-nest without Causing Swarming

BY LEON C. MILLER.

I have been using slatted dummies in my ten-frame hives the last two seasons, and find them a decided help. I have not tried to use them with the idea of stopping swarming entirely, but mainly to contract the brood-nest without causing the bees to swarm. I used them quite extensively this way last summer.

When the time comes to put on the comb-honey supers I go to the hive and remove any empty combs there may be (by empty ones I mean those not fairly well filled with either brood or honey). There will seldom be more than one or two, and many times none of these in the hive; but what there are I don't want left in there to furnish a place for the bees to store the honey that I want in the comb-honey supers. These I replace with the slatted dummies, and I find that bees so treated are no more inclined to swarm than those that are allowed to have their full amount of combs. On the other hand, if I put the ordinary solid dummies in the place of one or two combs it makes the hive just that much smaller, and just in that proportion has an effect in the tendency of the bees to swarm. Later, if I find it necessary to shake a colony I put the bees on about six frames of foundation, and fill the rest of the hive with these slatted dummies. A comb-honey super, filled with full-sheet foundation and bottom starters, *a la* Miller, or, better still, if there is one already partly filled from the colony before shaking, will make the work go on apace.

I think I shall try a few colonies this summer with two hive bodies, the frames alternating with the slatted dummies as described by Mr. Small on page 278, 279, May 1. I am not very enthusiastic about it, however, as I am of the opinion that bees work-

ed on that plan will not go above as readily as they should. I know they will not in a hive arranged that way without the dummies, for I have tried it. I experimented with a few hives that way one year; and when they had two stories fairly well filled I put on the supers; but instead of going right into it, as I expected them to do, they seemed to think they had honey enough, so they rested on their oars; and the consequence was I got very little honey those I worked on that plan. It may be that, with the slatted dummies, the queen will keep the frames better filled with brood instead of allowing them to be filled up with honey as they did for me, and this will have a tendency to force them up into the sections more. At least it is worth a trial, as I have plenty of the dummies on hand, and will not have to go to any extra expense.

I don't think it would pay any one to go into this plan of mine on a large scale, even though it might be a success, for I think it would be cheaper and much more satisfactory to buy the Aspinwall hive complete. But sometimes one might have the other equipment, and would not like to buy a whole new outfit, but would still like to make use of this principle. In this case I think it would pay very well either to make up or to hire made some of the slatted dummies to be used according to the plan I have outlined here, or as Mr. Small uses them.

Barryton, Mich.

FELLOWSHIP AMONG BEEKEEPERS THROUGH ORGANIZATION

BY HENRY REDDERT.

I received a letter from a beekeeper in Oklahoma in which he says, among other things: "I understand, after only two years' experience, that beekeepers are good brothers. I should like to get deeper into their fellowship." It sounds good. He is welcome. The first thing to do is to organize a beekeepers' association in his vicinity. Here is where good fellowship begins. Every county in every State where beekeepers dwell should have an association. Here is where they can make themselves at home, and a good home is the seat of good fellowship. Questions pertaining to beekeeping in all its phases may here be discussed at leisure. Good humor should prevail at all times.

In every country and clime where good men and women keep bees, good fellowship exists. This is an unwritten law. In a small town there is no need of a public hall to meet in. Halls are expensive. As little expense as possible should be incurred at

the beginning. In time if the association grows, which no doubt it will if managed properly, larger quarters may be obtained. At present any one's home will be a good place to hold a meeting, especially in small towns where everybody knows every one else. One meeting at one house, then in another, and so on as often as preferred, until each beekeeper's home has had a meeting, then starting again at the first one, works well.

Forage should be one of the chief topics discussed. Bee diseases, climatic conditions, the number of hives to be accommodated in a certain district, the different clovers best adapted to a given locality; honey-bearing trees, shrubs yielding nectar, various kinds of grapes, raspberry, blackberry, and honey-producing vines for shading porticos, laws governing the industry, and sweet clover sown in waste places, are all topics which should be considered. Each member should pay monthly dues for the maintenance of the association. A president, vice-president, and secretary-treasurer should be elected by the beekeepers; also an executive committee consisting of four or five members. Articles from bee journals may here be read and analyzed. The secretary is the business agent of the association. Through his energy and good will, many new additions can be made from time to time. From the president down, each one should do his part in booming good fellowship. Petty jealousies should be laid aside, and mutual assistance should be the slogan. With this in mind, good fellowship eventually will rule the beekeeping world.

Cincinnati, Ohio.

SEVERAL INSTANCES WHERE STINGS RELIEVED RHEUMATISM

BY S. S. TALBERT.

I have read with interest the arguments, pro and con, in regard to the cure of rheumatism by stings. While I have never had any experience of my own, I have kept bees in a small way for a number of years, and have observed the effects of stings administered to others.

In the spring of 1909 a friend of mine was so badly afflicted that he could hardly walk, taking not more than about six inches at a step. His fingers and toes were badly drawn out of shape, and he was a good subject to work on. He had heard something about the bee-sting remedy, and asked me to apply it; so one morning I caught a number of bees, and we went to the office of Dr. Smith, of this place, and I applied stings to the patient in the places indicated

by the doctor (he keeping at a safe distance). We applied 24 stings on his feet, knees, shoulders, and hands. It made him very sick for a while; but on the Wednesday following, to every one's astonishment he could *run*, and went to his work that same day. He was perfectly cured, and remained so for two years, when it became necessary to repeat the treatment. We again used the same remedy, only we gave him a larger dose. As soon as the soreness from the stings was gone the rheumatism was gone with it. This man, Mr. Homer Parker, offered a number of times to write a testimonial to any one wanting it, but on January 28, 1912, he died of heart failure, following a bad siege of rheumatic fever.

The cashier of the Brownsburg State Bank had been suffering from rheumatism for 20 years. Two years ago last winter he got his *nerve* and *will power* screwed up to where he thought he could try the stings; so one day, when the bees were flying, I caught some and applied about 20. It made him very sick; but when the effects wore off, his rheumatism was gone.

I don't think any one should apply the stings except when there is an attending physician, as it seems to have a depressing effect on the heart; but I think any one taking this treatment should take enough to get a good heroic dose of it. I have never known any beneficial results to follow an application of two or three stings.

Another case that I have happened to know about where the pain was more localized than the ones I have just described, was a resident of this place. He was affected in the knees and ankles. I applied six or seven stings to his knees and ankles. It relieved him within a few days' time.

No. 4, another man of this place, had rheumatism in his feet. I applied five stings to each foot. After the inflammation from the stings was gone, the rheumatism had disappeared.

For the benefit of any one wanting to try the cure, I will say the best way I have found to handle the bees is to drop them into a basin of water; then with the thumb and fore finger you can pick them up by the wing, and your finger and thumb nail will protect you from the sting.

Brownsburg, Ind.

[We wish to repeat the caution given by our correspondent in regard to the importance of applying the stings to the patient when a physician is present; for it is a well-known fact that certain persons are so constituted that it would be dangerous to get as many as twenty stings at once.—Ed.]

Heads of Grain from Different Fields

A Bee-tent on Wheels

As I read Mr. Byer's article on finding queens, Oct. 15, p. 619, I fully sympathized with him in the task of examining 280 hives, finding five queens per hour—*56 hours' work under a tent and on his knees*. He and perhaps others may like to know how they may work more comfortably. I built a tent for this purpose, upon the axle of a pair of old buggy wheels, using a light frame covered with wire screen. The wheels carry the weight of the tent, so that I made it 3½ ft. wide, 6 ft. long, and high enough to enable me to stand upright in it. I fitted a wide shelf at the wheel end of the cage for tools, supers, etc.

At the door end, opposite the wheels, I hung curtains which could be fastened together while at work, or opened for the purpose of drawing the cage over a hive. The size of the tent gives ample room for work, and requires no getting on one's knees, creeping under the tent, depending on some one else to pass in tools or supplies, as every thing needed can be carried on the shelf.

head elevated above their line of attack, and not so liable to be punished for his doings.

The tent stands ready for use at all times, and I find it convenient in queen-raising to be able to go into it for operations which otherwise would have to be performed in the workshop. A waterproof cover would make it still more convenient in times of sudden showers.

Frankfort, Kan.

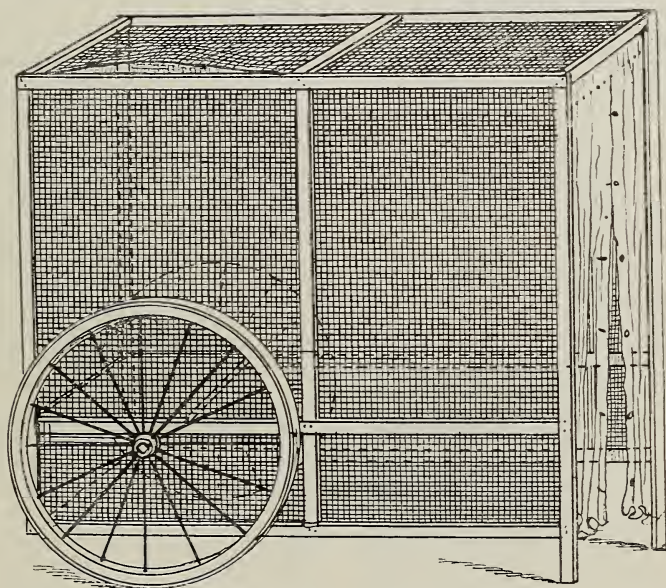
L. P. HOLMES.

How to Ship Bees; Water and Stores En Route

What is your experience in shipping colonies of bees long distances by water, Mediterranean ports to New York, for instance? Should they be supplied with candy or with honey? Are losses of bees likely to be heavy? Will sealed brood prove any disadvantage? In theory I believe that the frames should be filled with candy instead of comb and honey, and that they should be supplied with water; but I have had no experience along that line.

Lansing, Mich., May 20.

A. M. CLARK.



I made the tent tight at first, but found trouble from the gathering of bees from different hives; so I made escapes by prying the wire cloth from the frame at intervals along the top, inserting pieces of lath to hold it open. The bees readily find these openings, while robbers busy themselves only around the sides, near the level of the tops of the hives, where they can obtain no entrance. A few get in at the doorway when the wind blows the curtains open; but finding themselves imprisoned they are more anxious to get out than to create disturbance.

The frame of the tent is about 8 inches from the ground, in order to clear clumps of grass or other small obstructions. The first season I thought I had to hang a curtain around the bottom, reaching to the ground. I have not found it necessary this year, although robbers have been on the *qui vive* for any point exposed.

Nearly every blacksmith shop and many farms have old buggy wheels and axles which may be obtained for this purpose. The framework need be only of 1x2-inch lumber, and screen wire is reasonably cheap, so that such a cage or wheeled tent is inexpensive, and the comfort of being able to stand upright while at work is worth all the labor and expense of making. Then when coming out of the tent the operator is not in the midst of the robbers, but several feet behind the hive, with his

[Bees can be shipped by water as well as by rail with this difference: Transportation by the former is very much slower. Usually bees can be shipped by boat for very much less, for a given distance, than they can be sent by car; and where bees are not to be put out longer than a week or ten days we would ship by water, providing there was any object in the freight rates.]

Sealed stores are very much better for shipping bees than any form of candy that you can use. We have tested out the candy very thoroughly, and our experience in shipping thousands of nuclei all over the United States shows most conclusively that natural stores of the bees (or, rather, sealed stores of sugar syrup or honey) are to be preferred to any candy that was ever devised.

Yes, it is very important that bees be given plenty of water on the route, but usually it is impractical to give it unless they go in a carload with a man accompanying. It would be unwise to ask the ordinary expressman to water the bees, as he would overdo the job and probably kill them. When bees go by express they have to depend upon the stores they get in their regular combs, unless they are shipped in pound and half-pound packages. In that case we necessarily have to give them candy.

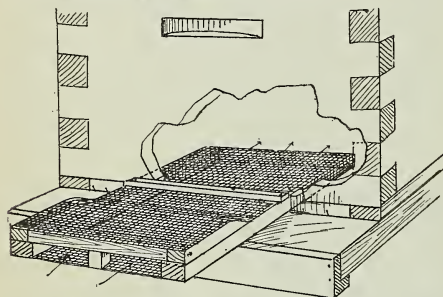
In shipping bees it is very important to put in the hives only sealed brood. The unsealed, unless

the bees are frequently watered, would be destroyed, as they will take up any moisture in the combs in lieu of water. We give quite full particulars on shipping bees in our June 15th issue, page 422.—Ed.]

A Device for Stopping Robbing Immediately

No device or method that will stop active robbing instantly and satisfactorily has been introduced to the beekeeping world. The spread of foul brood increases the danger of robbing, multiplies its hazard, and makes the need of a good combatant or anti-robbing device more urgent than ever.

Years ago I gave this matter attention. Time, with occasional experiences, has gradually unfolded to me a simple and effective remedy.



The device stops warring colonies immediately, and prevents the usual killing of bees. It neither encumbers the combatants by contracting the entrance nor by sprinkling with nauseous or poisonous liquid. Under such excitement bees need plenty of fresh air.

The entrance is to be placed against the entrance of the hive, and the other open end projects over and outside of the bottom-board. I fasten mine in case of robbing with screws or nails to the hive; but of course this method could be improved.

In a case where many bees rob a colony, and can not get in because of the device, they will soon go underneath at the end of the bottom-board, and with persistent efforts will press up and bulge in the wire gauze from beneath; and if not securely fastened, the whole thing will be lifted up and give them access to the inside. But no matter how many bees are robbing inside, they will and must all pass through the device in order to go outside, and they will do it—in a hurry too. Then in three or four minutes the rightful inmates will be masters of the field, and will again guard the entrance. As soon as peace and order are established, the device is, of course, removed, and the entrance may be contracted if necessary; for, although bees never leave their home while the battle is going on, they soon resume their flying afterward, and then the device would prevent their return.

Escondido, Cal.

L. F. LEONARD.

A Stampede for the Pollen of Wild Carrots

Of our common roadside plants the wild carrot is only occasionally visited by bees. I do not remember ever having found a bee searching for nectar over the broad white umbels, and usually the yield of pollen is rather scant. Its apicultural value is, therefore, slight in this part of the country. It is not to this which I wish to call attention, but rather to that well-known trait of the bee, the habit of confining its labors to some one particular species, to the exclusion of every thing else for the time being, though there may be other plants in bloom at the same time, apparently just as attractive. An illustration of this came under my observation the past season.

About August 20 I found that my bees had run a line to the north of the yard; and, being too early for buckwheat, I was uncertain as to what the attraction could be. I found the line headed for a good-sized field covered with a dense mass of white bloom. Getting closer the blossoms proved to be those of wild carrots. The plants had all come up after having been mowed previously in the haying. Each cut-off stem had sent out a number of branches all about the same height from the ground; and

these in turn had each borne a small cluster of blooms.

It was a field of carrots to the exclusion of every thing else. The bees were there by the thousand. They were apparently getting pollen only. In doing this they scampered in a lively way among the florets, flitting from one cluster to another until the greenish-white pellets were completed and the start for home was made.

Scattered along the roadsides and in old fields elsewhere, innumerable wild carrots were growing, the flower clusters on which were uniformly much larger than those to be found in this field of perhaps ten acres. It rarely happened that a bee would be found on one of the plants outside of the field in question. There were no aphides in sight, and nothing to indicate the presence of honey dew. Apparently the ease with which the pollen could be gathered, from the close massing of so many blossoms, would naturally seem to be the best explanation for the general behavior of the bees.

At the time of the preference for the carrots, the bees had been visiting five species of mints besides climbing hempweed, jewelweed, and two species of *Eupatorium*—plants all regularly visited. These, however, were all abandoned in the stampede for the wild carrots.

Aiken, Md.

J. FORD SEMPERS.

Can Bees Recognize Playing-cards?

It may not be known generally that a deck of playing-cards would play an important part in mating young queens, so here goes the kink. I take any card in the deck, except the pictures, and tack it close above the contracted entrance of a nucleus for a sign-board; and when the queen takes her wedding trip she notes that particular sign, and never fails to return to the right hive.

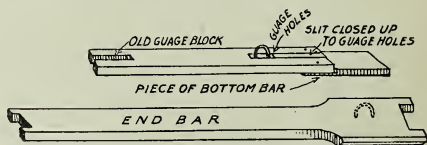
Monterey, Cal.

WM. A. SEDDING.

[While bees undoubtedly do recognize colors to some extent, we doubt very much whether they would be able to recognize one playing-card from another. They might distinguish a card that had all red on it from one all black; but as to whether they would be able to count the spots or to distinguish diamonds from hearts—well, we have our doubts. Bees are pretty smart creatures; but we can't believe they are able to distinguish cards.—Ed.]

How to Locate Quickly the End-spacing Staples

Perhaps some may be interested in my short cut for putting the end-spacing staples in place. I took the hard-wood block supplied with the frames, and cut one of the saw-kerfs 1½ inches long; then with a chip of section box, whittled thin, I stopped up all but 5-16 inch of the slit, leaving a hole for the staple. Then on the under side of the block I nailed, with ½-inch nails, a piece of bottom-bar, coming within ⅜ inch of the gauge hole.



I place a pile of end-bars on the table right in front of me, a saucer of staples, and a two-ounce hammer at my right; then I am ready for business. With the left hand I lay an end-bar in front of me, top to the right, bevel next to me, and lay the gauge on it with the stop piece, cut from a bottom-bar, in the notch. It fits loosely. The thumb and middle finger hold the end-bar steady, and the middle finger slides the stop into the notch and holds it there. With the right hand I pick up a staple, slip it into the gauge hole, hit it twice with the hammer, lift off the block, and throw the finished end-bar into a receptacle large enough to hold the whole season's supply.

It works like shelling peas. I soon wearied of handling both ends of a frame and maneuvering in an awkward corner; and, without thinking of the convenience of the bees, I saw that the staple would do better a little lower.

Florence, Ala.

H. A. MOODY.

Our Homes

A. I. ROOT.

The Lord gave, and the Lord hath taken away. Blessed be the name of the Lord.—JOB 1:21.

Buy the truth, and sell it not; yea, wisdom and instruction and understanding.—PROV. 23:23.

He will not always chide; neither will he keep his anger for ever.—PSALM 103:9.

DEATH OF WILBUR WRIGHT, THE OLDER OF THE WRIGHT BROTHERS, OF DAYTON, OHIO.

For the past half-dozen years or so the whole wide world has been discussing and reading in regard to the Wright brothers (and their flying-machines) more than, perhaps, any other two people on the face of the earth. In every clime and in every language people have been eager to learn all about the two young men who have succeeded for the first time in human history in making a machine that would fly, and carry passengers, purely by mechanical means without the aid of a balloon or any thing of the sort. In the March 1st issue of GLEANINGS for 1904 I first made mention of the two men, Orville and Wilbur Wright. It was in the fall and winter of 1903 that they first succeeded in applying a gasoline-engine to a gliding machine they had been experimenting with. In the summer of 1904 I wrote the Wrights, asking permission to pay them a visit and witness some of their experiments. This permission was kindly granted; but they preferred that I should make no mention through our journal of what I might see until later on. I made many visits to the field just outside of Dayton, where they were experimenting during the summer of 1904; and finally, in our issue for Jan. 1, 1905, I was given permission to write up what I had witnessed, this being the first detailed account, if I am correct, given in any periodical in the world of the experiments and final success of the Wright brothers.

It was my privilege to be present when they made their first flight of a mile or more, and turned a circle and came down to the place of starting. My write-up of the event was so astonishing that many people thought it was a piece of fiction to advertise our journal; and even so good an authority as the *Scientific American* did not see fit to credit my account, although afterward they apologized for their want of faith at first, in my plain and simple story.

In times past it has been my good fortune to become more or less intimately acquainted with some of God's noble men and women; and I shall always regard it as one of the privileges of my life that I was permit-

ted to become intimately acquainted with these two great characters (and I might say *benefactors*) of the human race. Wilbur Wright, the elder, was a little peculiar. Usually he was rather quiet and taciturn; but when he got agoing he was quite a talker. There was a peculiar twinkle in his eye, and an expressive working of the muscles of his face when a new idea occurred to him or when he had something pleasant to tell. While the two men worked together in perfect harmony, they often had lively discussions. Sometimes, one would think these discussions were becoming pretty nearly heated ones; but all of a sudden they would both stop and pitch into the work, and perhaps in a little while demonstrate *who* was right and *who* was wrong.

As Wilbur was the older of the two, for a time he seemed to do rather more flying than his brother Orville. I once asked their assistant mechanic which one of the two, in his opinion, was the more expert. He said he could not tell—sometimes one and sometimes the other. They first made quite a good many experiments by simply flying ahead in a straight line. Then the machine at that stage of the invention had to be wheeled back to the starting-place by hand. One day I came on the ground just as they had succeeded in making it turn a curve so as to fly at right angles to its course. They were getting ready to make another attempt; but a thunder cloud loomed up in the west, and they were about to abandon the experiment for the time being. As every thing was all ready for another flight I took the liberty of suggesting that they would have plenty of time to get around and get the machine safely housed before the blow would come up. In thinking of it since, I have considered that it was rather presuming on my part for me, an outsider, to offer such advice. Finally Wilbur, who was, I think, rather more venturesome than his brother, said *he* was ready to try it, and accordingly they started off rather hurriedly. Wilbur turned the curve at the end of the field, as before, and turned still another curve, and came around to the starting-place, where we expected him to alight; but to our great surprise and astonishment he went right on, over our heads, and was heading for a lot of telephone wires, thoru trees, etc. The other brother, the mechanic, and myself, were greatly alarmed. It was so long ago that I can not exactly recall the details; but for a time it seemed to us he

turned the rudder with the apparent intention of going over the obstacles and out of the field; but when he had sailed high enough to clear every thing the engine stopped, and the machine gradually slid back on the air, and alighted as safely and as gently as a feather, in their own field. We all rushed up to where he stopped, to see what was the matter. As I was considerably older than the other two, I did not get there in time to see what started the "discussion," but Wilbur was evidently considerably stirred up, and he and his brother were disputing rather hotly as to whose fault it was that he could not get the engine *stopped* when he came back to the starting-place. I finally interrupted the discussion by putting my hand on Wilbur's shoulder and remarking, "Why, my good friend, can't you stop long enough to look pleasant, and thank God for having permitted you *just now* to make the first flight since the world began, turning corners, and coming around to the stopping-place?" He looked at first a little vexed at the interruption, but finally his countenance softened, and that peculiar—I might almost say bewitching—smile spread over his countenance as he put out his hand and said, so far as I can recall, "Why, Mr. Root, I guess you are right; and I *am* glad and thankful that I succeeded, even if I could not get my engine stopped when I wanted it to stop."

I do not remember now what it was that made the engine keep going after the switch was turned off. I only remember that he put the blame on Orville, and I suppose it came about on account of the excitement of the moment in consequence of the thunder cloud, that caused the accident.

Later, after they succeeded in getting the machine to make circles in the air as long as they wanted to stay up, I made them a visit and happened to be there at the same time as Mr. Chanute, a man who had made experiments with gliding machines before the Wright brothers ever took it up. I believe he is still living, and that he is also, perhaps, one of the best authorities in the world on aeronautics. They were discussing finances. Mr. Chanute thought a *million of dollars* would be needed to put the invention on a sound financial footing. I remember I noticed the peculiar twinkle on Wilbur's face as he said something as follows:

"Mr. Chanute, I have no ambition to be a millionaire. So far as I am concerned, I think a hundred thousand dollars would be all I should ever have use for in this world."

And this was characteristic of the man.* When he crossed the water and went over to England, France, and Germany with their invention, crowds followed them everywhere—not only common people but the nobility, crowned heads, kings, and queens came to recognize and do homage to the Wright brothers of Dayton, Ohio. Well, in some foreign lands, as you may know, where they do not know or *care* when Sunday comes, Wilbur always paid respect to God's holy sabbath day, and several times the nobility (and, I think, once or twice members of the royal family, great lords and ladies) wanted to see the Americans and the American flying-machine on Sunday. Now, here comes a true test of courage and of fearless manhood. I use the word "manhood" in the best sense of the word. Wilbur Wright said gently but firmly that they had been taught to "remember the sabbath day to keep it holy," and kindly asked to be excused, not only from making any flight, but from exhibiting the machine on the generally recognized Sunday of the world. He added that, as soon as the day was passed, he and his brother would gladly and cheerfully be at their service. This has been heralded world-wide; and, no matter what *opinions* people may have in regard to sabbath desecration, I think one and all, good and bad, reverence and respect the memory of Wilbur Wright for standing up and living up to his honest convictions. I do not mean that his brother Orville was any less conspicuous in this matter than Wilbur; but Wilbur, being the elder, generally took the responsibility of being spokesman.

During my first visit, and while the Wrights were making application for a patent on their invention, there were certain things I was asked to avoid mentioning in print. On my last visit, Wilbur invited me to go over and see their great factory. This was described on p. 602, Sept. 15, 1910. On starting out I asked if I might be permitted to describe in our journal what I saw. Wilbur replied with that

*In connection with the above I may mention that the Wright brothers were many times offered considerable sums of money if they would exhibit their machine at State fairs or great expositions; but their invariable reply has been, "Gentlemen, we are not in the show business." The years they labored in perfecting their invention were not for the purpose of making money. It was to bless humanity. I suppose they recognized full well that an advertisement saying the Wright brothers would be present with their flying-machine would draw a bigger crowd than the mention of any other two men on the face of the earth. But they have never been and are not now catering to the curiosity of the crowds that frequent great fairs, expositions, etc. They felt and now feel, as I have tried to express it, that God was calling them in another direction.

same expressive twinkle, "Mr. Root, tell any thing you like, providing you *tell the truth*, and only the truth." How many proprietors of our American establishments nowadays would instruct a reporter of a magazine (who is writing it up) to avoid exaggeration or overstatement in his relation of what he saw? I mentioned this incident in my talk to our Bradentown Sunday-school, in Florida, and urged the youngsters who were listening to my account of the flying-machine, in the language of our last text, to "*buy the truth and sell it not.*"

One day we were all out in the field with the machine while there was a cool north-west wind. Wilbur was in his shirtsleeves while I, if I remember correctly, had on my fur cap and overcoat. I urged him to put on his coat lest he "catch cold." He looked up to me with one of those smiles I have mentioned, and said, "Mr. Root, I shall not catch cold out here in this breeze. That is not the way people catch cold, as a rule. They 'catch cold,' as you express it, by keeping themselves shut up in hot and poorly ventilated rooms; and perhaps they may take cold by going out from such places warmed by artificial heat; but people who live outdoors, as God intended they should live, do not take cold, even if they get to feeling a little chilly."

I believe this was his rule of life. A great strong man, full of life, blood, and energy, has been cut off by typhoid fever; and at least a part of the responsibility rests on you and me. "God will not always chide."

It was my pleasure several times to share their noonday lunches put up by that good sister Katherine. May God bless and sustain her in this great affliction. Well, their food was always plain, wholesome, and in keeping with their ideas about the importance of open air, etc. *Why* should he have been permitted to die when the world needs *such* men so much? "The Lord gave, and the Lord hath taken away."

I suppose the whole world knows that, while I write on this 31st day of May, 1912, Wilbur Wright is no more. He died on the early morning of Decoration day; but before the day was fairly closed, messages of condolence and regret came from those same foreign nations where they censured him but a few months ago, because he so firmly, as they put it, refused to fly on Sunday. May God be praised that such a man as Wilbur Wright has lived for 46 years to bless the world. His sad, sudden, and untimely death came from typhoid fever; and almost at the very time when the sad news reached us I had in my hand a little bulletin sent out by the Department of Agricul-

ture a few months ago, entitled, "How to Prevent Typhoid Fever."* As nearly as I can make out at this early date, he caught the fever while absent from his own beautiful sanitary home in Dayton.

In a recent issue I spoke of the way the Titanic disaster had taught us a lesson that the world could not be taught, perhaps, *without* such a loss of life. It has long been recognized, I believe, that typhoid fever is the result of ignoring well-known and sanitary laws. Is it possible that the loss of this good man, of so much value to the world at just this moment, is a part of God's plan to teach us not only to banish the *flies* that carry contagion, but to banish the filth that is feeding the flies even around farmers' homes, enabling them to increase and multiply? This bulletin I have been speaking of, says typhoid fever is more to be dreaded than smallpox; and may God help us to learn from this lesson what he is striving to teach us. When these government bulletins are furnished free, and when our farm papers, daily papers, and magazines are exhorting us, and we *still* sit down with folded hands, shall we not consider out text, "He will not always chide"?

*Another recent bulletin is on my desk entitled, "House Flies," and it has considerable to say in regard to the "typhoid fly," and the way in which the common house fly carries the typhoid germs. In fact, Prof. L. O. Howard says:

The insect we now call the "house fly" should in the future be termed the "typhoid fly," in order to call direct attention to the danger of allowing it to continue to breed unchecked.

"THE TITANIC DISASTER."—HAD GOD ANY THING TO DO WITH IT?

A. I. Root:—I have just reread your last *Homes*, and want to thank you for your brave strong words. Surely some of your conclusions regarding the Titanic disaster are worthy of world-wide notice. Some Bible-reading people have said, "God had nothing to do with that calamity." Strange to me is the fact that a great ship going swiftly *west* should meet an iceberg going south at just the right moment, at the exact danger-point, with a smooth sea, near the midnight hour, where the water is two miles deep. Could men or angels or even *demons* be more skillful? The mystery seems to be unraveled when we read the various bits of testimony you have gathered. It was a terrible lesson to the world—*yea*, a *costly* lesson; but we may conclude that God does not consider wealth as of much importance when he undertakes to teach the nations of earth a lesson.

I want to bid you Godspeed in your efforts as a writer. I think I can understand your interest in the *important* things of life. I have felt a tendency that way for some time; and a few lines of verse, written years ago for the *Day Star*, have come to mind with seemingly greater force and deeper meaning as the years slip by faster and faster; and many things seem now of less value than formerly.

OUR GREATEST NEED.

We want the power to choose the proper word—
Power to make our whispers heard:

Indeed, we covet, we desire

A pen of flame like torch of fire

To carry light and blaze and heat

To every soul we chance to meet—

Power to shield our youth from sin;

Power a *million* souls to win

To Christ, the Savior, Prince of Peace,

Whose reign begins when wars shall cease,

For power these principles to teach
To every soul we chance to reach.
Dear friends, when next in prayer you plead,
Remember this—our greatest need.

I was pleased to note what you have to say about voting for men in public place who wish to guide the great ship of state. Surely 'tis time to draw the line. See the Roosevelt edition of *Clean Politics*; and editorials in the *Outlook*. For myself I deem T. R. one of the most dangerous men before our

people. His military sentiments and cowboy cruelty will leave a great stain on the churches of the world that will not soon be removed.

Well, cry aloud and spare not. The old prophets are not any more popular than they used to be; but I am glad to believe they have *still* a message, and a goodly number are willing to hear and heed it, and some of the prophets will bring forth their *best* fruit in old age.

May the Holy Spirit lead you ever.

Boulder, Colo., May 23.

A. F. FOSTER.

HIGH-PRESSURE GARDENING

A. I. ROOT

CHUFAS, OR EARTH ALMONDS.

Perhaps some of the friends will wonder if my enthusiasm has all evaporated in regard to the above ground nut. Not at all; but my enthusiasm for *100 bushels an acre* has received a severe shock. Down in Florida, I had a yield in spots that might have been thirty or forty bushels to the acre. Here in Medina (see picture, page 598, Oct. 1, 1911) the fine stand I had was frozen out during the past severe winter. The reason I did not dig them before I went to Florida was on account of the prevailing wet weather. We dug a few; but the task of picking and washing them out of the mud was, I decided, more than they were worth, even if they did bring \$4.50 a bushel. And by the way, there is one drawback in growing chufas; and that is the difficulty of harvesting them. Suppose you had a lot of white beans scattered all through the ground like potatoes. How could you harvest them? how much would it cost? In the Florida sand it is quite a little easier; but even then they have to be hand-picked, so far as I can see, in order to have a clean crop.

Well, I am just as fond of roasted chufas as I ever was. There is no nut to compare them with for myself. We had a good many that were self-sown, or "volunteered," as some would call it, in Florida; but the moles or mice, or something else, ate up a great part of them before we got around. Now, in view of the above, imagine my surprise to see the following in Hastings' (Atlanta, Ga.) seed catalog:

The South buys more than a hundred million dollars' worth of meat every year. How many of your dollars help swell that enormous meat-bill? With chufas and peanuts you can grow meat just as cheaply as the Western farmer. Chufas can be planted as late as June 15, and make anywhere from 200 to 1000 bushels per acre, maturing in the fall, and can be left in the ground until you are ready to turn the hogs in on them. Highly recommended by the experiment stations of Alabama, Florida, Louisiana, and Arkansas. Exceptionally plump, sound, re-cleaned seed. Pound, 35 cents postpaid; peck, \$1.25; bushel (44 lbs.) \$4.50.

What do you think of the above—1000 bushels per acre? If they were all sold at \$4.50 they would bring \$4500. Surely that amount would pay for fertilizer *ad libitum*,

the best kind of underdrained and irrigated soil, and plenty of labor. Will the readers of GLEANINGS please tell me if they ever saw, not 1000 bushels, but even 100 bushels grown on one acre? The above advertisement is clipped from the *Southern Rural*. They recommend chufas for producing pork cheaply. Of course the hogs would do the "harvesting," so all the farmer would have to do would be to raise the crop. I did not know but they might stand freezing like artichokes, so they could be dug in the spring. I know they sometimes winter over in the ground here in the North, because I have seen them coming up the following spring where they were grown the year before. I am going to write Hastings and ask if the printers did not put in one cipher too much in the above estimate.

SWEET CLOVER FOR INOCULATING SOIL WHERE
EITHER RED CLOVER OR ALFALFA IS TO

BE GROWN.

Mr. Root:—I have just read about sweet clover in your May 15th issue. Nothing was said concerning inoculation of the soil with bacteria suitable to sweet clover. Several years ago I sowed red-clover seed in the corn in July, and got a fine stand. A strange plant (strange to me then) showed itself quite plentifully among the clover plants. This plant proved to be alfalfa, and came because in some way the dealer from whom I purchased the seed had gotten the two kinds of seed badly mixed. The alfalfa grew and thrived best near the road. The further away from the road, the less alfalfa. The road alongside the field has grown wonderful crops of sweet clover for a very long time. A young neighbor, who has lately taken a short agricultural course at Champaign, Ill., told me the reason the alfalfa grew best near the road is because the dust from the road blew into the field and inoculated the soil best near the road; and the further away from the road, the less inoculation. The soil bacteria for alfalfa and sweet clover is one and the same.

Peru, Ill., May 21.

E. H. WHITAKER.

Friend W., you have furnished us a highly important fact. Our Ohio experiment station at Wooster has for some time recommended getting soils from the roadsides where sweet clover grows, to inoculate fields for alfalfa. I have just been looking at about the finest stand of sweet clover I ever saw. It is on a piece of ground near our largest warehouse, where hard yellow clay was spread, that was taken out in excavating a basement. This hard yellow clay would ordinarily not grow any thing at all,

unless, indeed, a heavy dressing of stable manure was worked into it. But without any dressing whatever it is just covered with about the rankest growth of sweet clover I ever saw. The clover is now about three feet high (May 30). We propose to cut it with a scythe for our horses and cattle. I thought at first some member of our firm had directed the sowing of sweet-clover seed; but they all say they did nothing of the kind. Sweet clover, however, has been growing for years along the bank of a railway cut, a few yards away. The wind probably scattered the seed more or less over this freshly moved hard clay soil. The seed must have come up and made some growth at first, but it was not noticed. Now, this hard, impervious clay was just the place where the sweet clover could clinch its roots preparatory to pushing straight down that heavy thick tap root. See page 323, May 15. Just here I am reminded of something funny that happened several years ago.

JADOO FIBER FOR GROWING POTTED STRAWBERRY PLANTS; WHY WAS IT GIVEN UP?

Many of our readers will remember that several years ago I was enthusiastic about growing strawberries in little pots filled with jadoo fiber. This fiber is so light that it can be readily sent by mail, with sufficient moisture to keep the plants in excellent condition in transit. You may recall that we did quite a little business one fall in mailing these potted plants in jadoo.

I felt sure it was going to be a great invention. What was the trouble? It was this: We planted out several hundred in our own fields, and they started off so finely I expected a great crop from them. Imagine my surprise and chagrin, however, to find in the spring every potted plant set in jadoo out on top of the ground, and winter-killed, while those potted in clay or common garden soil stood the winter all right. The jadoo is so soft and yielding that the roots could get no hold on the soil, and every plant was brown out by the frost. Had the jadoo been all washed off from the plant when first put in the open ground, so the roots could get a new and firm hold in ordinary soil, they would, perhaps, have held their own. Now, this illustrates exactly what happens when sweet clover is sown in good or low fertile soil—that is, soil good for other crops. But when the seeds are dropped on the hard roadside or in a brickyard or on a railroad bank of hard unfertile clay, so it can get hold and push down that tap root, then it winters all right. The hardest, most unpromising, and impervious soil seems to have stood it the best.

Just a word more about jadoo fiber. Several have inquired lately why it is not now

manufactured and in the market. I believe that florists ceased using it first, because it was too expensive; and, second, because the plants seem to need, sooner or later, a stronger and more compact soil to grow in. I still think, however, that where plants are to be sent by mail, and have them reach the purchaser in good order, it is the best thing ever invented for the purpose.

POKEWEED FOR GREENS; GOLDEN BANTAM SWEET CORN.

Mr. Root:—I have just read of your latest new discovery, i. e., that pokeweed makes good greens, and believe you should, if possible, add a word of warning in your next issue. There is considerable poison in the root of poke, and in gathering it one should be careful to break the young shoot an inch or so above the root to avoid the possibility of getting any of the toxic properties. Some have been poisoned by carelessness in this matter. Poke was common in my former home in western Ohio, and used for greens by many farmers' families, but was not generally liked when cooked alone, being too soft and slippery. But when used with dandelions, dock, chard, liveforever, turnip-tops, etc., it was quite popular. Please tell us more definitely how to cook it as was done by your Florida neighbor. This may be the new discovery.

In my old home in Ohio, what was called poke was a large weed, one to two inches in diameter at the base, three to five feet high, and with berries in clusters like currants in late fall, and into the winter if not eaten by birds. This was eaten as greens only when the shoots were young, never when more than about eight inches high. Here a very different plant is poke, one which grows in boggy places in company with skunk cabbage, only a foot or two high, leafy like celtuce, and claimed to be very poisonous. What is called poke in Ohio (and Florida, I presume) is here called "skoke." The berries are often called pigeon berries. Now, if your statement on page 288, that poke, a supposed poisonous plant, is delicious when served as asparagus induces any one to eat this log plant it may result in serious sickness or even death, and, if possible, a correction should be made in your May 15th issue.

It is quite odd how plants and things generally are called by different names in different sections of our country. What is called dog-fennel in Ohio is here called Mayweed; lambquarter is called pigweed; hickory trees or nuts are called walnuts; shafts are thills; singletree is whiffletree; doubletree is eveners; but about the most peculiar provincialism here is calling a wagon a team.

Is it possible you have not learned that Golden Bantam sweet corn is much the hardiest, and may safely be planted while the ground is far too cold and wet for any of the white sweet corns? If so, you surely do not read your seed catalogs carefully. I am sending herewith leaves from some of the 1912 catalogs, on which I have marked the statements about the hardness of this variety.

Packer, Conn.

E. P. ROBINSON.

Thanks for corrections, friend R. The pokeweeds that we gathered in Florida were simply snapped off like asparagus, usually several inches above the surface of the ground. It is cooked exactly like dandelion greens. I supposed, without making inquiry, that they were simply boiled in water.*

You are probably correct in regard to the Bantam sweet corn, and I take pleasure in submitting to our readers the following extract from Burpee's catalog. I be-

*In consulting our dictionaries and encyclopedias of recent date I find pokeweed, but no mention of cokedweed, although it is true here in Ohio we have always been in the habit of calling it cokedweed.

lieve most seed-dealers now usually carry the Bantam in stock.

This corn is becoming each year more firmly fixed in popular favor because of its *extremely early character, vigorous growth, and surpassingly delicious flavor*. We have had hundreds of most enthusiastic letters from customers, giving it the highest praise as the *finest extra-early sweet corn* they have ever grown. Although the dry grain is entirely free from any flinty glaze, it is exceptionally hard and firm, hence can be planted *earlier* than any other *true sweet corn*. The stalks are dwarf and sturdy in habit, growing to a height of four feet. They bear two and three good ears, which are set well above the ground. The ears, five to seven inches in length, have eight rows of broad yellow grains, extending to the extreme rounded tip.

We first grew this Golden Bantam in northern Michigan, close by the "cabin in the woods." Since then we have grown it every season, and recommended it to the rest of the Roots and our neighbors; and we all agree with what is said in the above extract. By the way, I think we owe a vote of thanks to that enterprising seedsman, W. Atlee Burpee, not only for the Bantam corn, but for the many other good things he has given us.

POKEWEED "GREENS;" STILL MORE ABOUT IT. - My father tells me that fifty or sixty years ago he remembers eating pokeweed cooked as greens, but is under the impression that, if gathered in certain seasons, it is unfit for food.

My wife tells me that when a girl her mother cooked pokeweed. The earliest shoots alone were used, the shoots being peeled and parboiled to extract the poison, and afterward cooked and eaten as asparagus.

Mrs. Hamlin thinks that, if left too long before gathering, poke is poisonous. This is as explained to her by her father. I have not felt like having my family use the plant, not knowing enough about it, and I should be pleased if GLEANINGS would tell us how it is cooked for the table, when it is best to gather it, etc.

Pittston, Pa., May 8. P. M. C. HAMLIN.

Later.—I just now find the following in the *Rural New-Yorker*:

FALSE HELLEBORE.

This has very bright green stemless plaited leaves, coming up in thick tufts in spring. It is very distinct, but is occasionally gathered with marsh marigold, and boiled for spring greens, with fatal results. The plant, botanically, *Veratrum viride*, is also called Indian poke, wolfsbane, devil's bite, and bear corn. It must be remembered that vegetable poisons are very variable in character, and individuals also differ in degree of immunity. The deadly upas of Java may be handled with impunity by a person who would be blistered by an innocent little Himalayan primrose.

From the above I gather, as I before intimated, that there is some plant (may be Indian poke) resembling pokeweed; and this plant is probably responsible for the poison.

TOBACCO-GROWING IN OHIO; SHALL WE ENCOURAGE OUR BOYS TO ENGAGE IN THE INDUSTRY?

As a rule, I feel happy to get a new farmers' bulletin—especially one that emanates from our Ohio Experiment Station; but just now I am greatly pained to receive a nicely written and printed pamphlet, purporting to come from our Ohio Experiment Station at Wooster, with the heading, "To-

bacco-growing in Ohio." I have carefully scanned each of its nearly hundred pages to see if I could find a single sentence even remotely touching on the benefits of tobacco-growing to the people of the State of Ohio, especially to our boys and girls. This bulletin holds out no incentive to the industry except the *money* there is in it; and, if I am correct, the summing-up does not show that the profit is any more than that from growing corn, wheat, and potatoes, if as much. I happen to know (may God be praised) that the experiments with the tobacco plant are not conducted on the great farms at Wooster. When the Board of Management wished to have tobacco included in a list of farm products, there were at least two farm professors, and I do not know how many more, who objected; therefore the tobacco industry is conducted at some of the sub-stations in different parts of the State. I could not discover from the bulletin just where. It is a grand and glorious thing, this matter of introducing, even in our public schools, lessons in agriculture, and teaching our boys and girls to be expert in growing good and wholesome food for a hungry world; but (God help me while I say it, to have nothing but love and charity in my heart) who is there that *dares* to stand before our people in public or in print, urging that progress in growing tobacco will be a benefit to the coming generation of boys and girls? Of course, tobacco culture would include as a side issue the manufacture and sale of cigarettes. Let me give you a clipping right here from that grand little monthly, the *Philadelphia Farm Journal*:

STAMP IT OUT!

Judge Burke, of Chicago, has stated, "Our laws and times would not tolerate for one single moment the cigarette evil if the desolation which it *works* could be fully realized."

The *New York Journal* recently printed the following facts:

It is estimated that from 1200 to 1500 boys begin smoking every day.

Bad habits are the starting-point of criminal careers. Crime is keeping pace with the cigarette habit. Ninety per cent of youthful offenders are cigarette-smokers.

Students' mental and physical efficiency is lowered by smoking.

Tuberculosis fatalities are greatest among cigarette-smokers.

The cigarette is considered a key to the insane asylum.

Most school dullards and truants are cigarette-smokers.

The cigarette torch imperils life and property everywhere.

Eleven States have prohibited the manufacture and sale of cigarettes. Prohibitory laws are upheld by the United States Supreme Court.

All right-thinking people demand the extermination of this pest of society. Will you, boys, do your part in helping to stamp out the evil?

And, by the way, may the Lord be praised that our agricultural periodicals, almost if not quite without exception, are holding up a high standard of morals for these same "coming boys and girls."

POULTRY DEPARTMENT

A. I. ROOT

"NATURAL-HEN INCUBATORS," ETC.

Below are two advertisements that I clipped from poultry journals, and which I have decided to insert here without charge.

MARVELOUS! INCUBATOR WITHOUT LAMPS; USES NO OIL—BIG HATCHES.

A 200-egg size *Natural Hen Incubator* for \$3. Most successful for 10 years. Patented in U. S. and foreign countries. Hen herself controls heating, turns and airs eggs—does everything. No expense of heating. *Agents wanted.* Write for catalog to-day. Big money.

Natural Hen Incubator Co., 1349 Constance St., Dept. 4, Los Angeles, Cal.

200-EGG HATCHER, \$3.00.

Why pay \$20 or \$25 for a 200-egg hatcher with only a five-year guarantee, when you can now get one for \$3 guaranteed to hatch every hatchable egg and last for 50 years? This wonderful invention is called the PARADISE HATCHERY, which is pronounced by all to be the greatest hatcher for producing strong livable chicks ever invented. You'll say the same after you see and use one, and you'll wonder how you ever got along without it. Do you want to eliminate all your hatching troubles, and experience a successful hatching season? My free circular contains information that will put you right. Write at once.

Elmer S. West, box 30, Ewing, Ky.

Please notice that each one of them offers a 200-egg incubator at \$3.00. Well, on investigation you will find that both parties have no incubator at all to sell, and never did have. What they have to sell is a single sheet of paper, and you are to pay \$1.00 for this sheet of paper when you ought to have for the money a good-sized book, at least fairly well illustrated, of their invention. The first one of the two, hailing now from California, has been running this business for perhaps a dozen years past; and although I have shown the parties up through GLEANINGS every year or so, yet it seems they still succeed in raking in sufficient dollars from the innocent and unsuspecting to keep on advertising. I have remonstrated with the poultry journals; but many of them seem to think that, as long as they get *pay* from the advertisers, nothing more is required. What these fellows have to sell is a description of an apparatus to hold a dozen sitting hens or a smaller number. A hen's nest, with a little doorway attached to keep the hen from straying away, or from being annoyed, is as old as the hills; and a group of these nests, with their little doorway of poultry-netting or lathwork, is almost as old. It has been described and pictured in our farm journals time and again in years past. Very likely the venders have some sort of patent right on some detail of the construction of their apparatus. In years gone by, I have sent a dollar for it every little while to see whether any improvement was being made—that is, for the California machine. I

admit they have some satisfied customers, because there are many people who have never seen the arrangement and do not know that it has been for years before the public. The latter one of the two advertisements, coming from Louisville, Ky., is a copy, as I take it, of the California arrangement, notwithstanding he says in his advertisement:

HAVE NOT BORROWED.

Don't imagine for a moment that my invention is like other inventions or "poultry secrets" that are now being advertised and exploited in poultry journals throughout the country; for it is *entirely* original, and unlike any hatching device thus far produced; and I control the sole right of this wonderful invention; and all persons infringing on my rights will be vigorously prosecuted.

Once more, the second man says:

SIMPLICITY AND PRACTICABILITY.

The Paradise hatchery is so simple in its construction that any person who can drive a nail and saw a plank can, by following our simple written form of instructions and descriptions, together with the plain illustrations, easily construct a hatchery in a few minutes' time, at a very small cost.

Now, notwithstanding he says any person who can "drive a nail or saw a plank" can make the thing "in a few minutes," I do not believe that the average carpenter can make one in a whole day—that is, if he has to saw out the stuff and nail it together. In fact, I am not sure he could make one at all with the meager diagrams furnished, without the assistance of some poultryman; for although I have spent considerable time in trying to cipher it out, I am not sure I could tell how to make one at all from the directions.

The directions that were sent me for my dollar were evidently *printed* wrong. The figures are marked out, and different ones put in with pen and ink. Once more, you will see by the advertisement that he sells the 200-egg hatcher for \$3.00. Now, the bill for lumber and material *alone*, according to his own figuring in plain printed instructions, is \$4.00 for a 200-egg 12-hen hatcher, to say nothing about nailing up and painting. Once more, both parties make a big point of no expense for lamp, oil, etc. But how about the expense of a dozen sitting hens, keeping them from throwing up their jobs, watching the eggs when they happen to break them, keeping out vermin, etc.? If this sort of advertising is not using the mails for fraudulent purposes, then I am mistaken.

Just one thing more about the natural-hen incubator. Even after you have read their "spread-eagle" advertisements you

may not be tempted to send a dollar right off, but wait a while. In about ten days you will get something additional, saying that, for some special reason, they have concluded to cut down the price to 75 cts. But if you still delay, a little later comes an offer for the small sum of 50 cents for a "full individual right," and a lot of valuable recipes thrown in; and I think, although I have not now the documents on hand, that still later they come down to 25 cents. And this is a fair illustration of a lot of schemes to get your money by some hook or crook. Whenever any advertiser, after a few days, begins to cut down his prices, look out for him. See what I have said about the "memory school" on page 23, advertising pages, May 1.

Since dictating the above, the *American Poultry Journal* for June has come to hand, and in it as good an authority as Prince T. Woods, M. D., describes and pictures an incubator which is substantially the same thing as mentioned above. Below is the opening paragraph:

Would you like to build an open-air incubator, one that can be run out of doors from the middle of March until late in the fall, one that costs only about \$1.50 per 150-egg capacity, labor included, one that hatches by the natural method, and will hatch every hatchable egg that a good sitter can hatch? If so, build and try a Wozelma open-air natural incubator, ten-hen capacity.

You can easily build one from waste lumber, a little wire netting and roofing fabric, by following dimensions here given, and using the illustrations from photographs for a guide. Ours holds 150 eggs, fifteen under each hen, ten compartments, a sitting hen in each compartment. It costs about 75 cents for material and less than two hours' labor.

The description of how to make it occupies something more than a full page, including four excellent photos of the sitting-hen incubator in actual use. Please notice what I have said about the sitting hen giving larger fertility than the average incubator, or perhaps any incubator. There is no question that these things are a success if properly made and handled. But think of charging a dollar for the crude directions, few or no illustrations, on a single sheet of paper, when the whole thing is given by an able writer and an expert poultry-keeper in one of our poultry journals!

Still later.—In the *Poultry Tribune* for June our good friend Mrs. Mattie Webster writes as follows:

I think the most convenient and greatest labor-saving device is the "hatcher," where each hen may have her individual run where she may exercise, and there have placed food, water, and grit. We have one of thirteen nests and runs, and you may be sure the first thirteen broody hens are always set in this hatcher.

Still further, I just now discover that in the frontispiece in that valuable little book, "Poultry Secrets," is a collection of nests for sitting hens with a latticed dooryard for each hen.

BLOOD-STREAKED EGGS, ETC.

I should very much appreciate having you request your poultry department to advise me of a remedy as well as suggest the cause of the following affliction which seems to affect a few of my hens. Occasionally a hen will appear to be suffering from an internal hemorrhage which lasts for two or three weeks, and which is evidenced in the form of bloody piles. Perhaps it is due to the food, or some germ of disease.

Chicago, Ill., May 30.

C. F. CHILDS.

My good friend, I regret that I am not able to suggest a remedy; but very likely some one who reads *GLEANINGS* may be able to give us help. I had one hen in Florida whose eggs were streaked with blood more or less. On examination I found about the same conditions you mention. I put her off by herself, and gave her a diet principally of bread and milk, and she recovered. Whether the treatment had any thing to do with the recovery or not I am unable to tell. Where a large number of fowls are kept I believe it is often the case that there will be occasionally an egg that has marks of blood on it as I have described.

INDIAN RUNNER DUCKS.

The May number of the *Pacific Poultryman*, Seattle, Wash., is a "duck number," and principally devoted to the Indian Runner duck. There is a large number of contributions from those having tried the Indian Runners, and every one gives a favorable report in regard to them. I am not surprised to see a special number of this poultry magazine devoted to the Runner ducks; and I shall not be much surprised to see a journal started very soon, all devoted to the raising of Runner ducks. The objection has been raised that the Runners are large eaters. Here is what one of the writers in the above journal says in regard to it; and the statement accords most emphatically with my own experience.

They are large eaters; yes, but they make every bite they eat count to good advantage. Besides, they eat cheap food, for one half their feed may be green feed.

Give them plenty of green food that they like; such as lettuce, mustard, dandelion, or even good fresh grass, and you will save half the grain needed, or more.

THE SITTING HEN AHEAD OF ANY INCUBATOR FOR STARTING FERTILITY.

I make two clippings from the *Poultryman* in regard to this matter.

I am convinced that no incubator will start all the fertile duck eggs.

The hen is the best incubator, and, if possible, eggs should be given to hens for a week or ten days before placing them in the incubator.

Will not our experiment stations test this matter thoroughly with our best incubators? It is certainly an important matter to be settled, and the experiment stations of our different States, being unbiased, are the proper ones to settle it.